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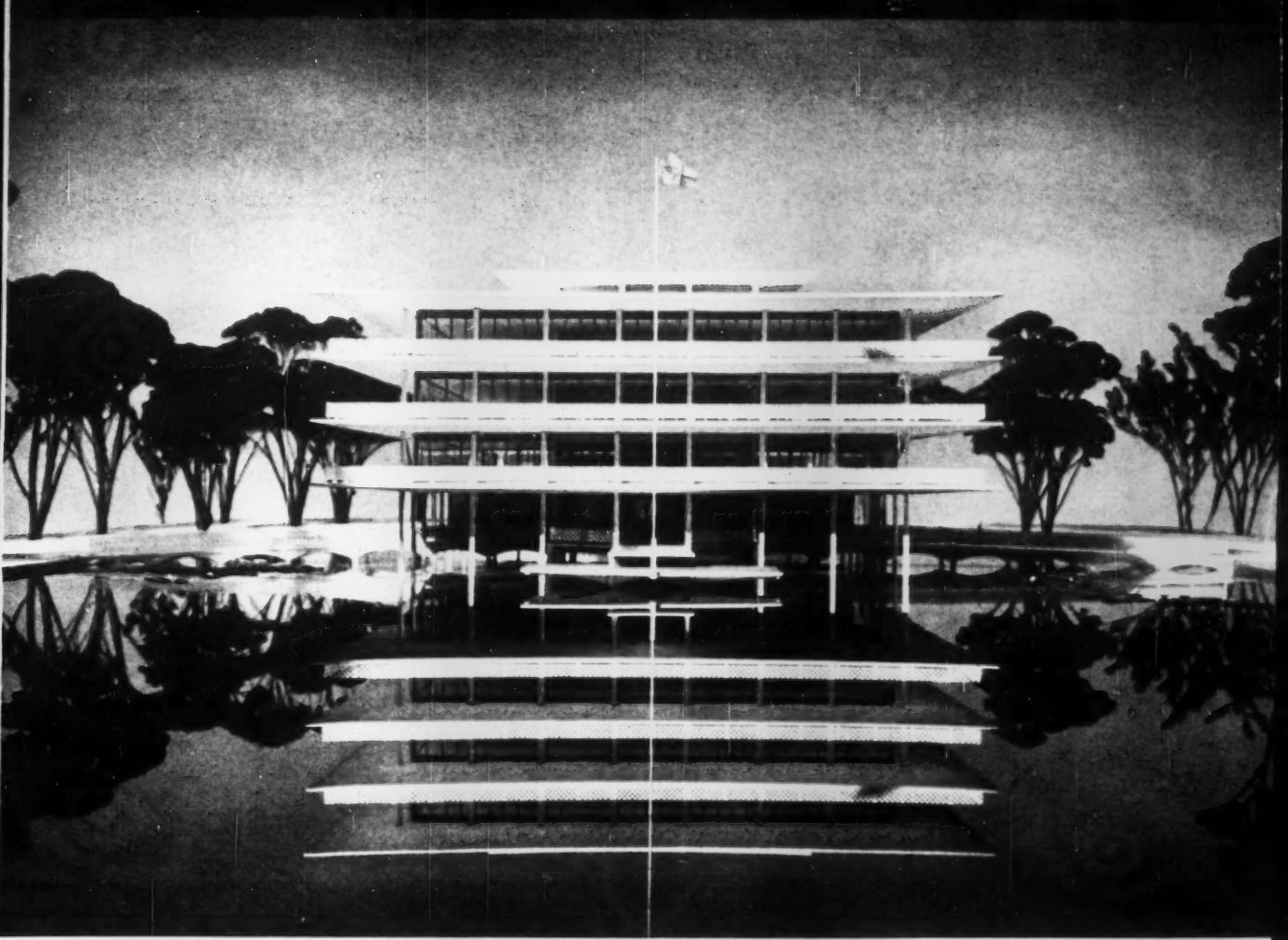

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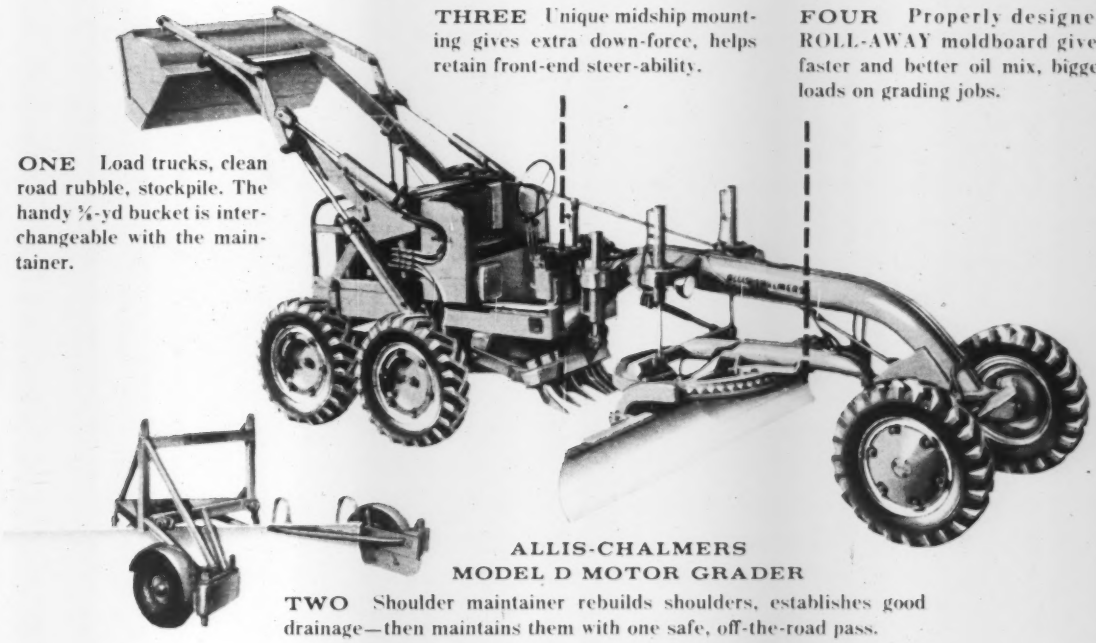

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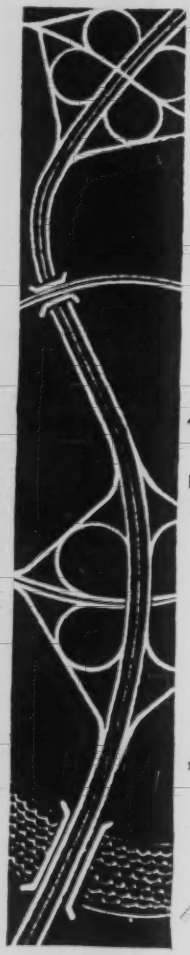

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OUTSTANDING PERFORMANCE, widespread use, and record tonnage production of BatchOmatic plants, of all sizes, have proved their revolutionary principles and features, first introduced in 1955:

First inherently automatic design . . . simultaneous measuring of all aggregate gradations . . . new principle of asphalt measuring . . . pre-set proportions . . . larger screening area, including full deck for fine material, and new adjustable directional throw . . . exclusive material flow selector . . . new Dyna-Mix pugmill for faster mixing, faster discharge . . . fast-stacking, self-contained sections with quick-disconnect couplings . . . and many others.

Now Barber-Greene announces the new BatchOmatic series, incorporating more outstanding advances—improvements based on the experience of all BatchOmatic plants operating on every type of job, producing every type of mix, including the abnormally rigid specs of the AASHO Test Road. These new features and improvements further increase ease and flexibility of operation, and daily tonnage output.

No lost seconds in automatic cycling—Only dry and wet mix cycles are controlled by timers. New sequence-relay system automatically starts each function the *instant* the previous one ends, substantially increasing tonnage.

New electric-over-hydraulic main controls—Controls electrically actuate hydraulic valves located directly on the rams, greatly reducing hydraulic piping, fittings and valves. Simpler construction and maintenance.

25% more weigh-hopper capacity—The unique multiple BatchOmatic weigh-hopper, which permits simultaneous measuring of all gradations, has been enlarged. Adjustable sidewalls are hydraulically controlled separately or simultaneously. Unlimited flexibility for handling all extremities of gradation percentages.

Multiple pre-set mixes—Easily switch to any pre-set mix. Pre-setting is instantly cancelled hydraulically for special mix. Automatic return to pre-set to resume production.

New, faster change of asphalt content—The unique, adjustable suction pipe measuring principle can now be quickly dial-set to the required number of pounds.

New fines control with fast change of proportion—Immediate dial-setting of fines content for any percentage of bulk or bagged mineral filler through new special vane feeder.

Also available with single weigh-hopper and power controls—These power-control towers have most of the BatchOmatic features, including interlocked dry and wet mix timers, and the asphalt measuring system. Available as 2- 3- 4- 5- and 6000-pound plants.

New, improved auxiliary units: New, improved Barber-Greene Dryers, Portable and Stationary Dust Collectors, Aggregate Feed Systems, and completely new Wet Scrubbers further increase production of all asphalt plants.

These are just the high spots. Ask for literature on these new advancements.

59-10-A

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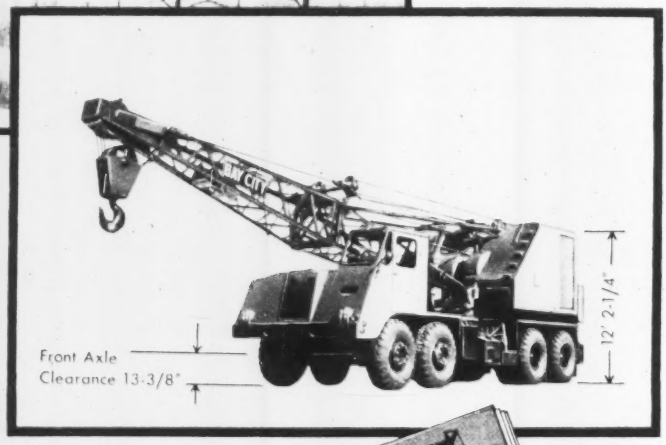
◀ 40 Ton, 8 wheel CraneMobile raises maximum boom and jib . . . without assistance.



The new BAY CITY 8 wheel CraneMobile has been designed and built for heavy-duty service, convenience and safety . . . economy and ease-of-operation . . . for greatest stability and best load distribution. It has a nominal crane rating of 40 tons at 12 foot radius with 40 foot boom over side or end with outriggers set. The long wheel base gives outstanding roadability, the big engine has plenty of power for off-the-road service or highway travel at selective speeds. Vehicle weight may be readily stripped down to 17,270 lbs. per rear axle and 13,120 lbs. per front axle. Overhead clearance height only 12' 2¼".

NEW 3¾% FINANCE PLAN FOR YOU . . .

BAY CITY now offers a new low-cost, 3¾% financing plan that makes it easy to put Performance Proved BAY CITY equipment to work for you. Monthly payments up to 3 years on crawler machines, 2 years on rubber tire mounted machines. See your BAY CITY dealer, or write for details.

A NEW 40 TON CRANEMOBILE CATALOG that gives complete information on design features and construction of this new eight wheel carrier, is available now. It's free. Send for it today.

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283

B.F.Goodrich

B.F.Goodrich tires help contractor speed rugged construction of Glen Canyon Dam

MIGHTY Glen Canyon Dam—world's third highest—will tower 700 feet above the bedrock of the Colorado River in northcentral Arizona. Before this massive project can be completed, millions of tons of rock, sandstone, aggregate and other materials must be moved over rocky haul roads.

To help keep this rugged job on schedule, Merritt-Chapman & Scott Corporation, general contractor, relies on B.F.Goodrich tires and service—uses 47 different types and sizes of tires on 28 different types of equipment that work 'round the clock. For example, M-C&S uses B.F.Goodrich Rock Service tires on belly dump trucks (above).

B.F.Goodrich builds the Rock Service for just this kind of work. Husky double-chevron cleats pull in forward or reverse, defy rock cuts and bruises. B.F.Goodrich FLEX-RITE NYLON cords withstand double the impact of ordinary cord materials, resist heat blowouts and flex breaks. Result: This B.F.Goodrich cord body outwears even the extra-thick tread, can be retreaded over and over.

Other B.F.Goodrich products at work at Glen Canyon include conveyor belting, air hose and fire hose. Special maintenance and service for tires and industrial products are also in operation—all part of the new B.F.Goodrich Unified Contractor Program. No matter what your off-the-road job, B.F.Goodrich is ready to serve you—and help you save. Your Smileage dealer is listed under Tires in the Yellow Pages of your phone book. *The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich *off-the-road tires*

CLOW

UNDER WATER

4-man crew lays 1500 feet a day of CLOW 8" Bell-Tite Joint cast iron pipe through Florida swampland—often in 3 feet of water. Hancock Pipe Co., Clearwater, Fla., contractor.

AT 14° BELOW 0

Despite rocky terrain and digging through 2 to 3 feet of frost, workers were able to lay 50% as much 12" Bell-Tite pipe a day at 14 below zero as under normal conditions. Trench was 11 feet deep. Nels Nelson & Sons, Duluth, Minn., contractors.

OR IDEAL CONDITIONS

Laying 2000 feet a day of CLOW Bell-Tite Joint pipe under ideal conditions at Boca Raton, Florida. Reilly-Bates Corp., Pompano Beach, Fla., contractors. Black & Associates, Gainesville, Fla., consulting engineers.

CAST IRON PIPE

PROVED...

CLOW Bell-Tite® JOINT

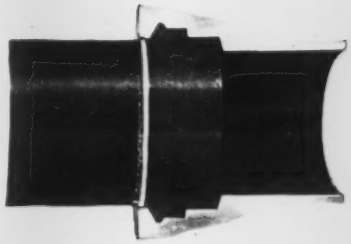
CAST IRON PIPE

saves time and money under all installation conditions

Clow Bell-Tite Joint costs less to buy and less to install. Assembly is easy and rapid and the rate of installation depends only on the speed with which the trench can be excavated.

A single molded rubber gasket is the only accessory required. No bolts, no nuts, no followers, no couplings, no extras to buy. Clow Bell-Tite pipe is available from 3″ to 24″ in any thickness or weight in accordance with ASA, AWWA, or Federal specifications.

Clow Bell-Tite Joint is easily assembled—just wipe clean, lubricate and push spigot into the bell. When painted yellow stripe is no longer visible, joint is pressure tight.



OUR 81st YEAR
1878 • 1959

It will pay you to know the savings in time and money CLOW Bell-Tite Joint Cast Iron Pipe makes possible. Let us give you complete information on its many advantages.

CLOW CAST IRON PIPE

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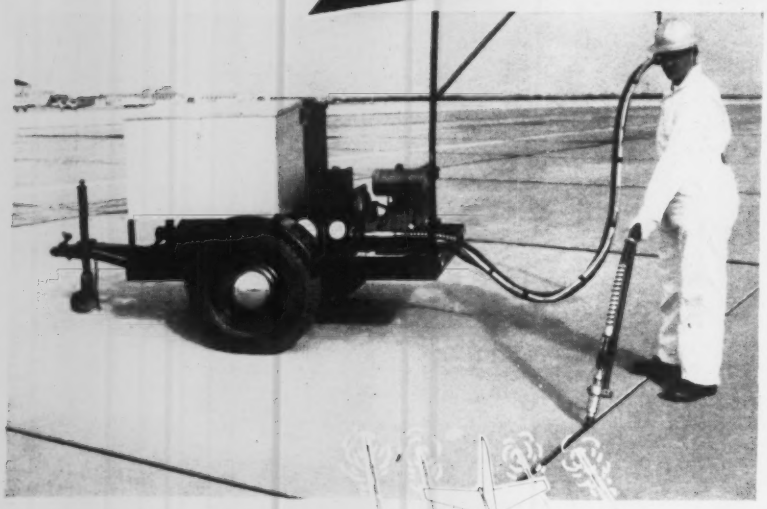

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Reader Comment

Testing Soil at Brasilia

Sir—In the article on Brasilia (ENR April 9, p. 35) appears the statement: "Since soil conditions at Brasilia were not fully known, Raymond, after studying various alternatives, elected to use concrete caissons."

The inference is that uncertainty as to soil conditions was a factor involved in this decision.

Actually, upwards of forty-seven soil borings were made in the area concerned, and were the primary basis for choosing caissons. The design depth capacity of the caisson boring machines was established only after analysis of an extensive laboratory and field test program. Included were several dozen unconfined and triaxial compression tests, consolidated tests, and direct shear tests, supplemented by several deep plate bearing tests in the field. The design bearing capacity was established after comparing results of several analytical methods, involving the laboratory test data as well as the standard penetration resistance values.

ULRICH W. STOLL
(Formerly Soils Engineer, Raymond International)
Instructor, Civil Engineering
University of Michigan
Ann Arbor, Mich.

Mucho Sun, Poco Water

SIR—I read with interest the article about sea water distillation (ENR Mar. 12, p. 24) and would like to obtain more information concerning solar evaporation.

I live in Manta, a sea port with 30,000 inhabitants. Drinking water is trucked 15 miles and is expensive, scarce and hard. Located about 30 miles from the equator, Manta has plenty of sunshine every day.

I am a professor of physics at the University of Portoviejo, 20 miles from here. We can do any kind of experiments and research if necessary, but I would like to have more information about the condensers, such as whether or not it would be better to supply every home with a small condenser.

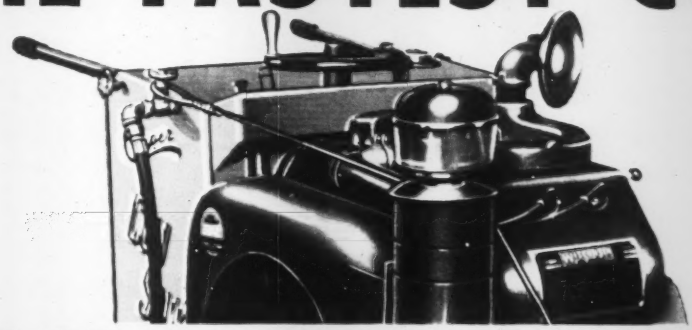
Manta does not have water supply lines.

ING. CESAR A. DELGADO
P. O. Box 4813
Manta, Ecuador

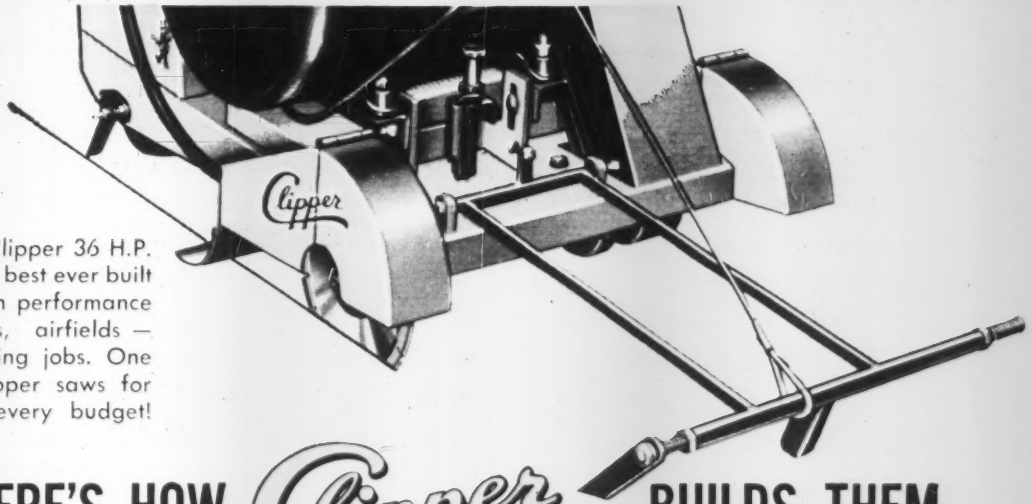
(Reader Comment continued p. 12)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

THE FASTEST CUTTING

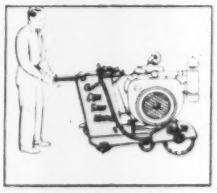


CONCRETE SAW BUILT!

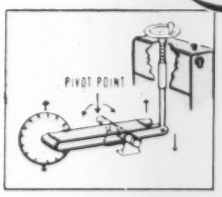


The rugged Clipper 36 H.P. Model C-363, best ever built for production performance on highways, airfields — heavy trenching jobs. One of many Clipper saws for every job — every budget!

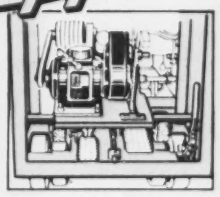
AND HERE'S HOW Clipper "SAWS RIGHT THRU" BUILDS THEM...



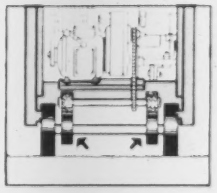
Our engineering staff really outdid themselves with Dual Balance Design—which simply means that this Big Saw is so perfectly balanced that one man can easily handle it. The engine weight is over the blade, preventing blade "ride-out". It's easier to use than any other saw—another reason why 4 out of 5 Buy Clipper!



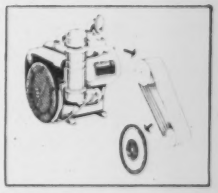
Only the most accurate blade feed was good enough for us, so we originated Ball Bearing Positive Screw Feed which gives you positive control of the blade at all times . . . and enables you to keep abrasive blades at the proper cutting depth as they diminish in diameter. No other method . . . not even hydraulic . . . gives such complete blade protection.



We bring you the most powerful Heavy Duty Transmission ever used on a concrete saw. To it we've added abrasive coated drive wheels (ours only) which transmit smooth continuous power and propels this rugged saw through the toughest jobs at speeds up to 26 feet per minute. Another reason why it's the fastest saw ever built!



Solved! The problem of curing compound buildup on the drive wheels. We added two Separate Contact Wheels which never touch the pavement and operate right off the transmission drive wheels. Result? Continuous operation without downtime for wheel clean-up. A good example of our experienced know-how, which means more practical, efficient equipment for you.



Selection of component parts gets the same intelligent thought given the design of Clipper Saws. That's why we chose the dependable proven 36 H.P. Wisconsin Engine, then added 6 reinforced V-Belts to give 100% sure power delivery. That's why we can guarantee that no other saw can match Clipper!

ONLY CLIPPER CONCRETE SAWS ARE . . . Unconditionally Guaranteed TO CUT FASTER— HANDLE EASIER and GIVE MORE FOOTAGE PER BLADE THAN ANY OTHER SAW!

434X

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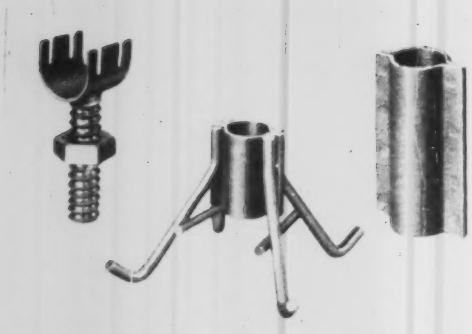
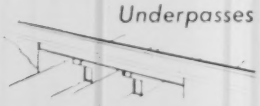
Sold direct from Clipper offices and warehouses coast to coast. • Call your Factory Trained Representative for Free Demonstration.

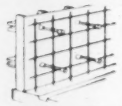


HEAVY-DUTY SCREED SUPPORTS

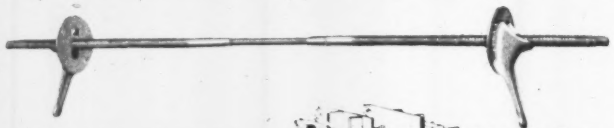


Overpasses and Underpasses

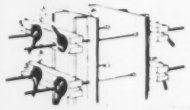
THREADED COIL TIES



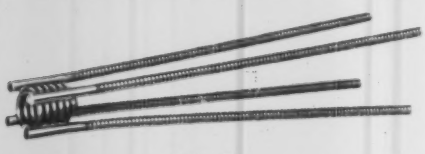
Engineering Structures



TILT LOCK CLAMPS



Heavy-Duty Forming



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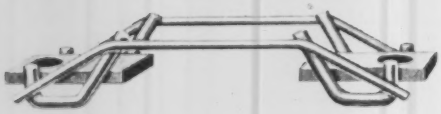
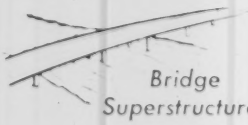
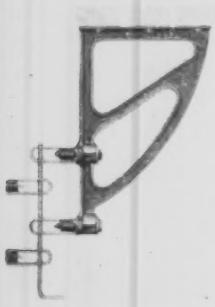


PLATE HANGER FRAMES

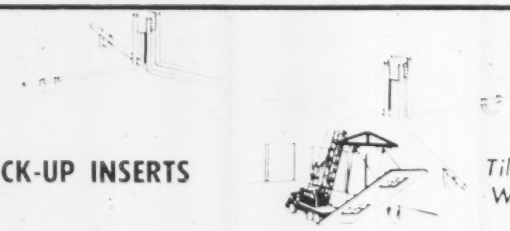


Bridge Superstructures



RISER-FRAMES

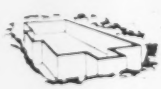
Stadiums and Grandstands



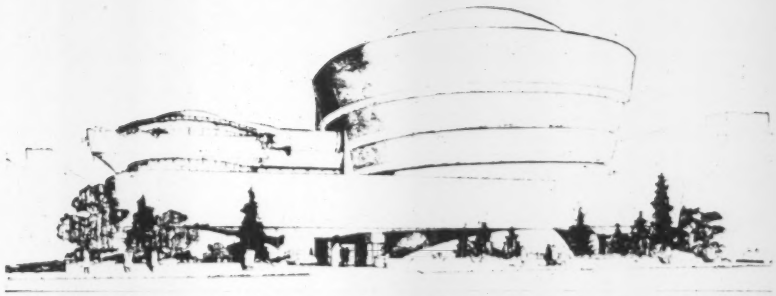
PICK-UP INSERTS

Tilt-Up Work

SNAP TIES



Ordinary Foundations



GUGGENHEIM MUSEUM, Fifth Avenue at Central Park, New York.

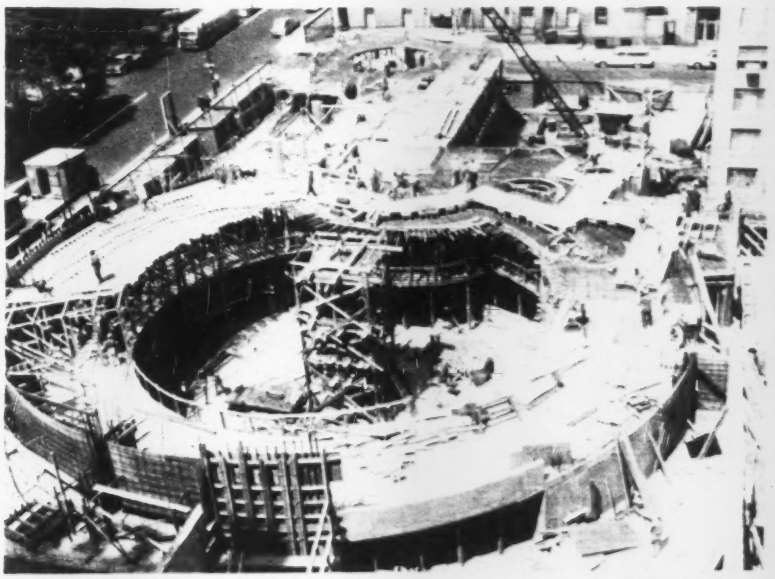
Frank Lloyd Wright gives 'em helix

WHEN FRANK LLOYD WRIGHT designed the new Guggenheim Museum as a helix (spiral), he saved art lovers many steps. But he also gave the contractor a complex problem in concreting.

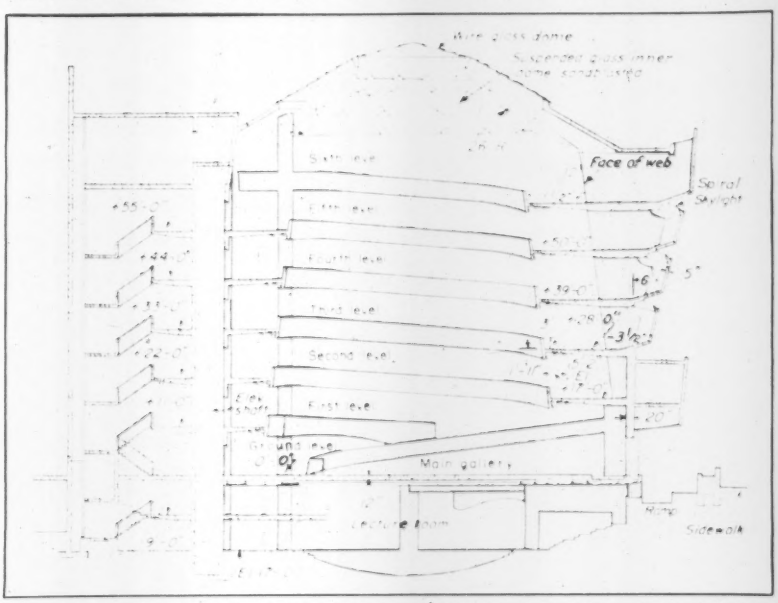
The exhibition gallery is an enclosed concrete ramp that spirals clockwise around a center court to the first level, then reverses to corkscrew counterclockwise for 5 more levels. This design enables visitors to ride the elevator up to any level and then view the exhibits in an easy downhill walk.

A total of 8,000 cu. yds. of reinforced concrete, of three different types, was required: Lightweight expanded-shale for ramp and floors, stone concrete for interior walls and 5" Gunite for exterior walls. Design was 3,500 psi and 3" to 4" slump. Plasticizing and air-entraining admixtures improved workability, reduced heat development and retarded setting in 100° F. temperatures.

Daily pours varied from 10 to 200 cu. yds. Uniformity of batches was assured by using ready-mixed concrete, properly processed in truck mixers of certified design, capacity, mixing speed and water control accuracy.



A NAIL, driven into post at dead center of tower, was point from which angles and chords were established. Circular floor for administration building shows in background.



SIX LEVELS, BUT NO STEPS: Ramp widens from 96' outside diameter at ground level to 125' at top. It is actually a gigantic spring, stiffened, but not supported, by 10" thick concrete webs, on 30' centers, which also serve as partitions between galleries. There are no conventional columns. Euclid Contracting Corp., N.Y.C., contractor.

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. . . Reader Comment

Plastic Design 'Hinges'

SIR—Your book section has performed another great service, which I'm sure many readers, in addition to myself, appreciate. The new book "Plastic Designs in Steel" (ENR April 16, p. 122) will become a much used part of every structural designer's library.

It has been my experience that one pitfall in attempting an explanation of plastic theory is epitomized by the wording in one of the "key" paragraphs in your announcement. Perhaps the paragraph might read:

"With increasing load, the entire cross section of a (steel) beam can become plastic without failure occuring. As more load is applied to the beam, this section rotates without—**'a corresponding increase in'**—resistance. In effect, it acts as a 'plastic hinge'."

It is important to understand that when a beam has developed its full "plastic" resistive-moment, that resistive-moment doesn't disappear as load is increased; rather it simply remains constant (up to strain hardening). Unfortunately, the word "hinge" carries a connotation which tends to hide this.

ROBERT M. LARKIN
Smith & Caffrey Steel Co.
Syracuse, N. Y.

No 'Feet of Clay'

Editor's Note: In Alfred Zweig's article on the Detroit bank building (ENR Apr. 16, p. 48) an editorial slip caused the author's wording, "The building stands in soft blue clay, but rests on hardpan", to read "The building stands on feet of clay." Apologies to Author Zweig.

For Your Calendar . . .

Industrial Water Conservation Conference, University of Michigan School of Public Health, Ann Arbor, Mich., June 8-10. Write: Wm. Bender, University of Michigan School of Public Health, Ann Arbor, Mich.

Southern Research Institute Conference, Birmingham, Ala., June 11-12. Write: Southern Research Institute, 2000 9th Ave., South, Birmingham 5, Ala.

Symposium on Plastic Design in Steel, Queen's University at Kingston, Ontario, June 15-19. Write: Dr. H. W. Curran, Director of Extension, Queen's University, Kingston, Ontario.

American Society of Engineering Education, University of Pittsburgh and Carnegie Institute of Technology, Pittsburgh, Pa., June 15-19. Write: W. Leighton Collins, American Society for Engineering Education, University of Illinois, Urbana, Illinois.

National Society of Professional Engineers, Annual Meeting, Commodore Hotel, New York City, June 17-20. Write: C. L. Ritchie, NSPE, 2029 K St., N. W., Washington, D. C.

American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 21-26. Write: ASTM, 1916 Race St., Philadelphia 3, Pa.

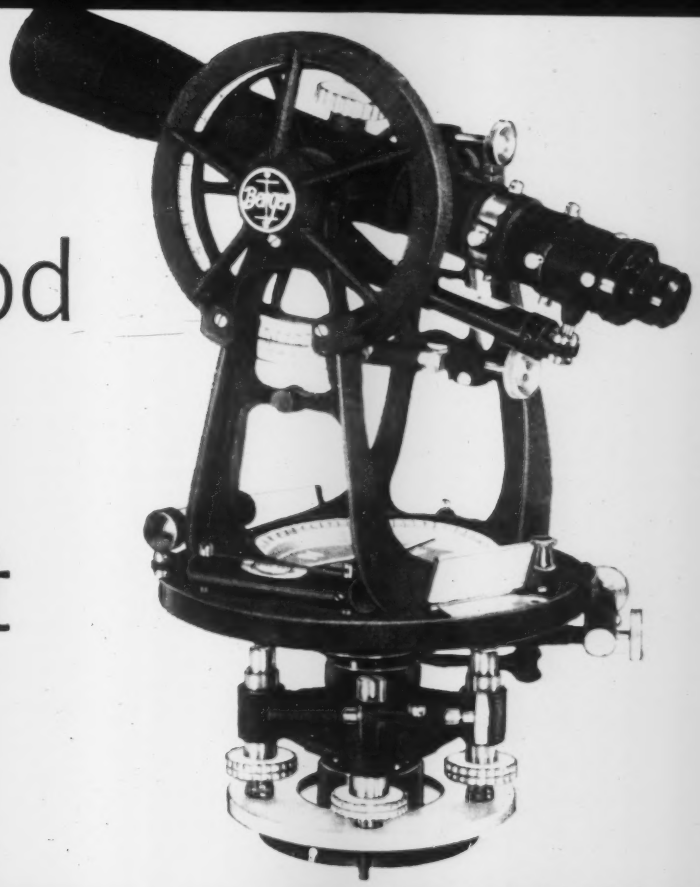
American Institute of Architects, Annual Meeting, Roosevelt Hotel, New Orleans, La., June 22-26, 27.

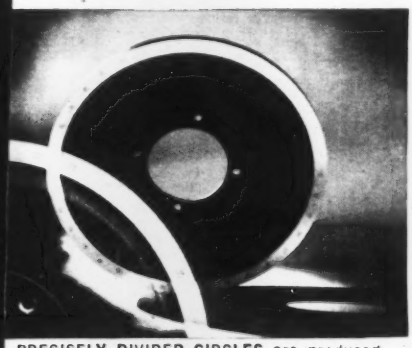
Illuminating Engineering Society, Great Lakes Regional Conference, Hotel Lafayette, Buffalo, N. Y., June 22-23. Write: Leo R. Mentzer, IES, 345 Washington St., Buffalo 3, N. Y.

Air Pollution Control Association, Annual Meeting, Hotel Statler, Los Angeles, Calif., June 22-26.

Asphalt Institute Mid-June Meeting, Hotel del Coronado, San Diego, Calif., June 23-25.

how good should a transit be?





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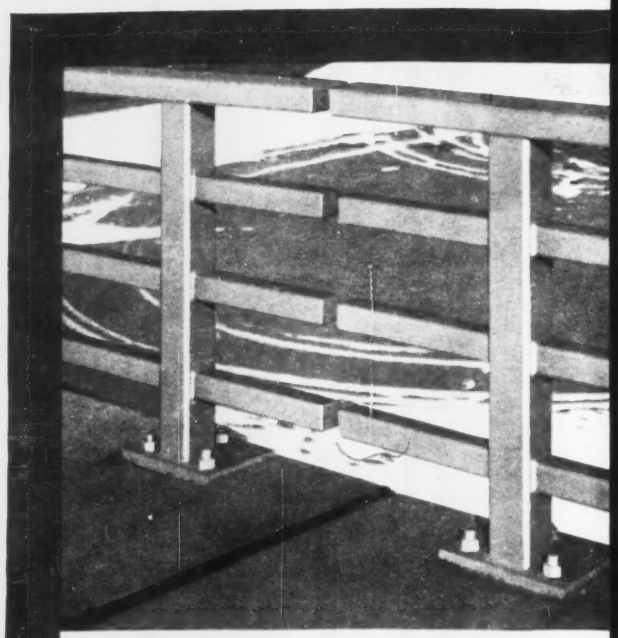

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○ ROUND SIZES—B.W.G.														
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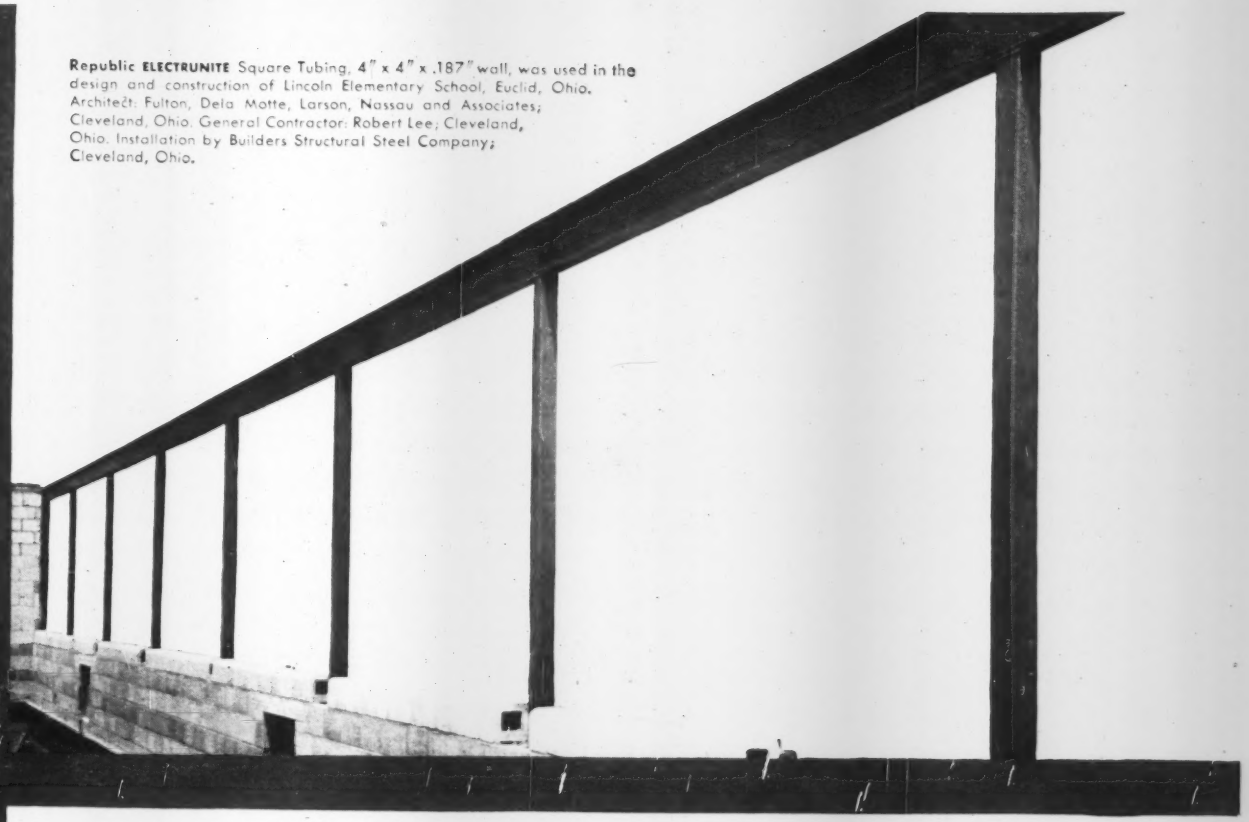
1"	○	○	○	○	○	○	○	○	○	○		
2"	○	○	○	○	○	○	○	○	○	○		
2½"	○	○	○	○	○	○	○	○	○	○		
3"	○	○	○	○	○	○	○	○	○	○	○	○
3½"	○	○	○	○	○	○	○	○	○	○	○	○
4"	○	○	○	○	○	○	○	○	○	○	○	○
4½"	○	○	○	○	○	○	○	○	○	○	○	○
5"		○	○	○	○	○	○	○	○	○	○	○
6"		○	○	○	○	○	○	○	○	○	○	○

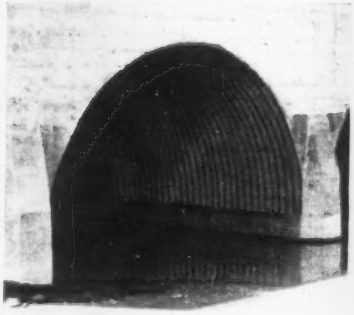
□ SQUARE SIZES—B.W.G.														
O.D.	18	16	14	13	11	10	9	8	7	6	5	.250
½x½	□	□										
¾x¾	□	□	□									
1x1	□	□	□									
1½x1½	□	□	□	□	□	□	□	□	□			
2x2	□	□	□	□	□	□	□	□	□	□		
2½x2½	□	□	□	□	□	□	□	□	□	□	□	
3x3	□	□	□	□	□	□	□	□	□	□	□	□
4x4	□	□	□	□	□	□	□	□	□	□	□	□
5x5	□	□	□	□	□	□	□	□	□	□	□	□

□ RECTANGULAR SIZES—B.W.G.														
O.D.	18	16	14	13	12	11	10	8	6	5	4	.250
½x1	□	□	□	□								
1x2	□	□	□	□	□	□	□	□				
1x3	□	□	□	□	□	□	□	□				
2x3	□	□	□	□	□	□	□	□	□	□		
2x4	□	□	□	□	□	□	□	□	□	□	□	□
2x5	□	□	□	□	□	□	□	□	□	□	□	□
2½x5	□	□	□	□	□	□	□	□	□	□	□	□
3x5	□	□	□	□	□	□	□	□	□	□	□	□
4x6	□	□	□	□	□	□	□	□	□	□	□	□

Above are representative of the common available sizes. Many intermediate sizes also available. Tubes are produced by several processes in accordance with the size-gage ratio; therefore not all sizes and gages are readily available in all grades of product. Please contact your nearest Steel and Tubes Division representative for information on specific size, gage and grade desired.



Republic ELECTRUNITE Square Tubing, 4" x 4" x .187" wall, was used in the design and construction of Lincoln Elementary School, Euclid, Ohio. Architect: Fulton, Dela Motte, Larson, Nassau and Associates; Cleveland, Ohio. General Contractor: Robert Lee; Cleveland, Ohio. Installation by Builders Structural Steel Company; Cleveland, Ohio.



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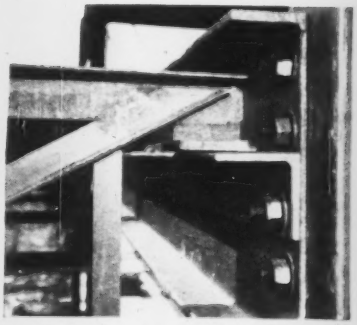

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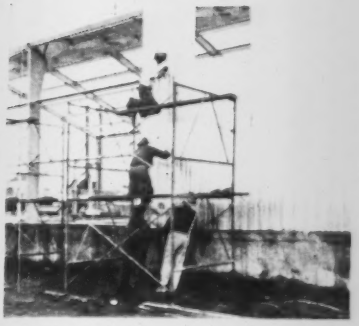

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THE CONSTRUCTION WEEK

NO MONEY IN DESALTING YET—It will probably be five years before Fluor Corp.'s development work in salt-water conversion with atomic heat will start adding to company earnings, Fluor's president believes. The firm is working on an experimental plant under a contract with the Department of the Interior. Fluor's stock rose last week reportedly because of rumors from Washington about expected federal decisions on pilot plant construction (see p. 23).

ANTI-SINKING FUND—Mexico City will reportedly sell a $40 million bond issue to finance a project aimed at stopping the city from sinking. So much groundwater is withdrawn now from 2,700 wells in the federal district that parts of the city are sinking a foot a year. The plan calls for a system of deep wells outside the city, fed by groundwater from nearby volcanoes and the Sierra Nevada Mountains.

BUILDING MATERIALS TAX?—Florida contractors are fighting a proposal to tax building materials used or stored on a construction job contracted for by the federal government. Lawmakers are on a spot because the alternative—a sales tax on liquor and beer—is being fought equally hard by liquor interests.

COME AND GET IT—Free cement is the come-on offered to any municipal development agency in Arkansas provided the cement is used to construct an industrial plant. Donor is Arkansas Cement Co., wholly-owned subsidiary of Arkansas Louisiana Gas Co. The utility figures that any plant brought to the state will become its customer.

THE FRENCH DIG IN—A big blast last week started French tunnelers into Mt. Blanc to begin what's bound to be a competitive construction effort with Italians already tunneling into Europe's highest mountain from the other side. When the French and Italians are through tunneling in 1961, they will have completed the 7.5 mile Mt. Blanc vehicular tunnel, the world's "longest shortcut" (ENR Mar. 26, p. 30).

SHORT TIMER—Ralph G. Muñy has resigned as Commissioner of the Public Buildings Service after less than two months in office.

HOT BUILDING—Some Mexico City demolition contractor may be faced with the job of tearing down a radioactive building without exposing his crew to danger. That's the situation set up by the discovery of a lost capsule of radioactive bromide in a hospital building's office safe. Personnel and building materials have been exposed to the radiation for many years. If the National Nuclear Commission determines that the building is badly contaminated, it will have to be removed.

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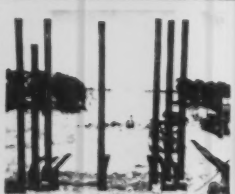
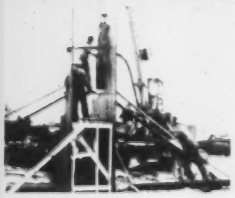


PIPE FOUNDATION PILE
Brazos River Bridge, Hearne, Tex.
J. A. Raines Construction Co.



FOSTER LIGHTWEIGHT PILING
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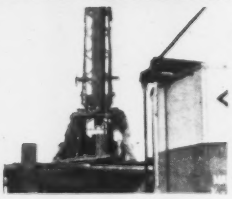

H-BEARING PILE
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WASHINGTON OBSERVER

- Missile decision still in air
- Housing bill faces more delay
- Airport aid: Expect the minimum

● **The fight over construction of new antiaircraft missile bases has taken a new twist, and is a long way from a decision.**

The House Appropriations Committee cut the Pentagon's budget request for production of Air Force Bomarc missiles by one-third and approved all the funds sought for procurement of the Army's rival Nike-Hercules missile.

The House committee's action is not a real vote of confidence for the controversial Nike-Hercules program. The committee found it easier to cut Bomarc procurement since the missile is just going into volume production.

Odds still favor an end to construction of Nike-Hercules bases (as the Senate Appropriations Committee recommended), and a scaling-down of plans to build Bomarc bases.

● **Further delay on a new housing bill is in prospect.** House-Senate conferees, who had expected to begin their compromise efforts last weekend, did not get under way on schedule. It looks like serious conference work cannot now begin until the week of June 8, meaning no delivery to the White House until mid-June or later.

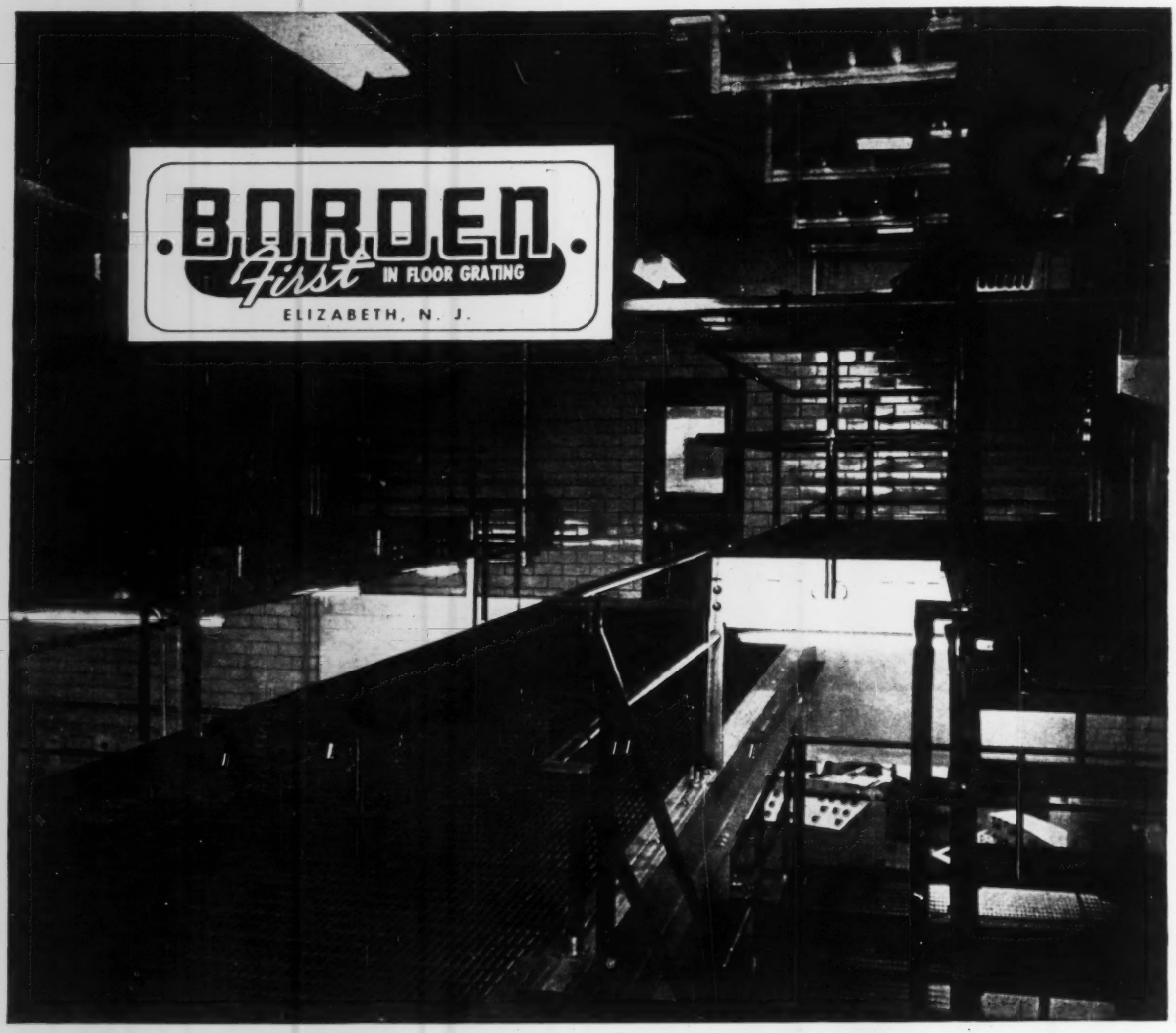
In-fighting has already begun. Industry groups—such as the National Association of Home Builders—generally are advocating whittling down such things as public housing and college loans, hoping this might entice President Eisenhower to give the bill a signature albeit grudgingly. Liberal elements in Congress and some public organizations—such as labor unions and the Americans for Democratic Action—are for the bigger spending provisions.

"Backdoor spending" is in no immediate danger. You can expect the conferees hurriedly to junk the House-adopted amendment that would give the Appropriations Committees veto power over funds for public housing and urban renewal. Present practice will survive—that is, once federal agencies have received legislative authorization, they can continue to enter into contractual obligations and borrow from the Treasury whatever funds are needed to pay for their programs.

● **A minimal program for federal aid to airport construction is about all that hard-pressed city planners can expect to get out of this Congress.** After a long delay, House-Senate conferees got together last week for the first time. The result, while indecisive, wasn't cheering from the municipal viewpoint.

The Senate group offered to lop off $100 million from its proposed authorization of $465 million during the next four years. The House delegates, defending their $297-million four-year program, were adamant. They vowed the Senate would have to give much more to get agreement.

Also at issue: runways vs terminal buildings. Inside reports say the House group is firm in its demand that federal funds be spent only for runways and related landing facilities. The Senate conferees, as ENR went to press, were trying to get a compromise to bail out cities that have tied up local funds in current projects on the assumption that the new federal help would be forthcoming for both runways and terminals.



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1959's Bachelors of Civil Engineering have been wooed and won. Result:

Construction Loses Many Grads

Construction's new supply of engineers, the civil engineering Class of '59, knows pretty well where it's going. And it's not all going into construction.

Graduate work gets a fairly healthy number of this month's graduates; Uncle Sam takes his share; and the aircraft, missile and electronic manufacturers have effectively made their pitch.

What's left, construction gets. And they're often second choice—not always, of course, because many civil engineering grads want construction work.

Among construction employers, government agencies—principally highway departments—have recruited heavily. Contractors get some grads without half trying. And consulting engineering organizations pick up many, hardly trying at all.

This year's graduates in civil engineering have been in greater demand than last year's and they will be paid more. All but a small percentage are already hired, and at salaries a few percentage points up from last year. **The average starting pay approaches $500 per month.**

Talking to deans, department heads, placement officials and the students themselves at a dozen major civil engineering schools across the country last week, ENR staffers report demand for graduates with bachelor's degrees has been heavy this year due to several things—principally highway and defense spending.

There was much more recruiting on the campuses this year than in the recession-bottom spring of 1958. As one college placement director recalls, some companies sent representatives in '58 just to keep in touch; they had no jobs to offer. Others canceled out. For CE seniors, this year has been more like 1957, but not quite as good.

Recruiters from many recession-ridden organizations have been more selective. They have interviewed more prospects at fewer colleges. And scholastic records are more frequently mentioned as of interest to recruiters this year. Only "personality" rates higher.

As usual, the students themselves cite location, opportunity, and money as the factors influencing their choice of first job—but not in any discernible order of importance.

The whole picture of their job choice and the reasoning behind it are often clouded by an upcoming tour of duty with the armed services. The best-job-possible isn't too important to the grad who'll go into uniform six months hence. And many will.

Similarly, many are taking summer jobs prior to graduate work. And for still others, ambitions for graduate degrees make location the predominant factor in job choice; they want to be near night-school opportunities.

Resistance to relocation apparently remains high in the young American male. ENR's reporters interviewed only one female CE senior). But the long-echoed advice of Horace Greeley is having some effect this year, with many young men set to go West for offers of California's highway department and aircraft companies.

Civil engineering deans and department heads generally see a fair balance between supply and demand for their '59 graduates. But it's a students' market in most places. These educators as a group are not overly concerned about the relative drop-off in CE enrollment. Only here and there does one say "we need a campaign" to stimulate interest in civil engineering.

Criticism of recruiters and their methods comes from the students.

Government agencies and manufacturing industries recruited the hardest, so they get most of the brickbats—and bouquets. The students like a recruiter who's ready to "offer good salary and talk business right away." And they say the men from manufacturing industries are best at this. But state highway department representatives rate fairly high. Pet peeves are the recruiters with too little time and those with the hard sell that doesn't quite come to grips with tangibles.

Many students recognized manufacturers' recruiters as real pros. Well they should; recruiter training programs are becoming popular and the results are said to be gratifying. Some students complain of the less adept recruiters from government, suggesting they are part-timers with no full appreciation of the job applicant's interests.

The successful recruiters, from the students' viewpoint, were those who showed "real interest in us."

School by school, here was the situation in some of the major civil engineering schools this year as construction's employers got only some of the engineering graduates educated primarily for the construction industry.

Georgia Tech, with 84 CE graduates this year (there were 18 in '58), will

send 25% to 30% to graduate school. This is higher than most colleges and higher than the percentage for Georgia Tech as a whole. Another 25% will go into the service within six months, and this, too, is high.

Prof. Robert L. Steinke, CE department head, guesses that when the rest of his class is placed, it will split about evenly between private and government employers.

Salaries will range from $450 to $595 per month in general, up 6% from last year. Professor Steinke says the master's degree can usually command another $100 per month at this year's starting salaries; a few years ago it counted for little, if any, difference in civil engineering.

At the University of Colorado there were 76 graduates, three more than last year. Two will do full-time graduate work; ten are headed directly for the armed forces.

There was a slight step-up in recruiting this year (last year the "recruiters" were only contacting), and the result has been jobs in the $400 to $560 monthly range for almost all ready to take them.

Northeastern University in Boston seemed to produce more CEs than there were civil engineering jobs in its metropolitan area. (There were 71 graduated in the day school class.) But they'll all find their places.

About 10% will go on for advance studies; about 70% face soon-if-not-now military service as a result of Northeastern's very large ROTC enrollment. Recruiters from out of the West were "crying for them."

So with local demand said to be off 20%, many a New Englander has been lured away from home for $485 to $650 per month.

Michigan State at Lansing had 56 CE graduates, same as last year. It had more than twice as many interviewers this year.

Contractors recruited in Michigan and government agencies were very active; highway and forestry agencies in particular. CEs were in heavy demand at $450 to $530 a month. A $510 offer came from North American Aviation; $510 filled a starting job in traffic engineering in Los Angeles.

North Carolina State had 99 civils. Most are placed. Two will stay in school, 12 will go right into the service, and about an equal number of the rest will go into private and public employ. Most of those taking government jobs go into highway work.

Prof. Ralph E. Fadum, CE department head, says recruiters were more selective this year but "opportunities have never been better . . . will continue to be good." The pay offers started at $460 for CEs.

Rensselaer Polytechnic Institute is graduating 73 civils, six more than last year. Perhaps 10% will stay right on at RPI for graduate work, and a few others may study for master's degrees elsewhere. The class includes 23 Navy and Coast Guard officers who will go back to their billets. And another 16 not yet in the service are all set for it.

Recruiting activity was up a bit from last year with a few contractors represented, but no consultants. Starting pay commanded by CEs averaged $500 per month, up almost $10 from '58.

Admiral Lewis B. Combs, civil engineering department head, points out that 216 CEs made up only about 10% of all RPI's undergraduate enrollment this year. There were 722 electricals. He says demand for civils is going to continue increasing, but freshman enrollments are off.

Engineering school enrollments in general were off 11% last September and a further drop is expected next fall, according to Engineers Joint Council.

Ohio State University had 26 CEs and 92 recruiters came to woo them. Aircraft and missile companies predominated, but the U. S. Bureau of Public Roads and state highway people were there, too. Demand was said to be up because of government recruiters, yet government was called the poorest recruiter to come to Columbus.

Three of six Ohio State students ENR interviewed were off to North American Aviation—top pay, $640.

University of Minnesota has 37 graduating, and 15% will go on to graduate school.

Job seekers found the BPR and the Minnesota Highway Department recruiting actively. A few contractors and some consultants sought graduates.

The pay range was $450 to $600 with the CE's average somewhere between $515 and $520, up about $15 from '58.

Scholastic standing was a real factor, according to Dean Elmer Johnson of the placement department. High marks counted for better offers—even from the federal government. Most U. of M. graduates are five-year men, with master's degrees if they have accelerated. This helps explain the high salaries.

Massachusetts Institute of Technology had 39 civils with an extraordinary number, 16, sure to go into graduate work.

MIT found contractors recruiting seriously, along with government agencies and manufacturers. Consultants' interest dropped, and the total demand for MIT men dropped with it. The graduate schools' representatives obviously did the outstanding job this year. The California Highway Department did well, too. Pay ranged from $460 to $525.

The College of the City of New York had 60 CEs graduating, compared to 89 last year. Only two will go into full-time advanced studies, and two directly into the service.

Various government agencies came to CCNY with jobs for a total of 32 civil engineers. "Civil engineers can all get jobs in government, but not too many want them," says E. W. Schnabele, placement director.

Offers of private employment were disappointing. Even the contractors who interviewed were choosy, preferred to talk to top men.

Offers ranged from $450 to $500.

Manhattan College had 70. Eight go straight to the armed forces, four to graduate work.

Salaries offered found mode in $450 to $480 area and ranged to $540. The success of government recruiting, principally the Federal Aviation Agency and various New York City agencies, explains the lower-than-average starting pays.

Why Did Grads Choose Civil Engineering? Would They Make the Same Choice Again?

- Aptitudes evidenced in high school.
- An attraction to construction.
- A construction man in the family.
- Liking for outdoor work.

Those are the principal reasons this year's graduates in civil engineering give for their choice of college course three, four or more years ago.

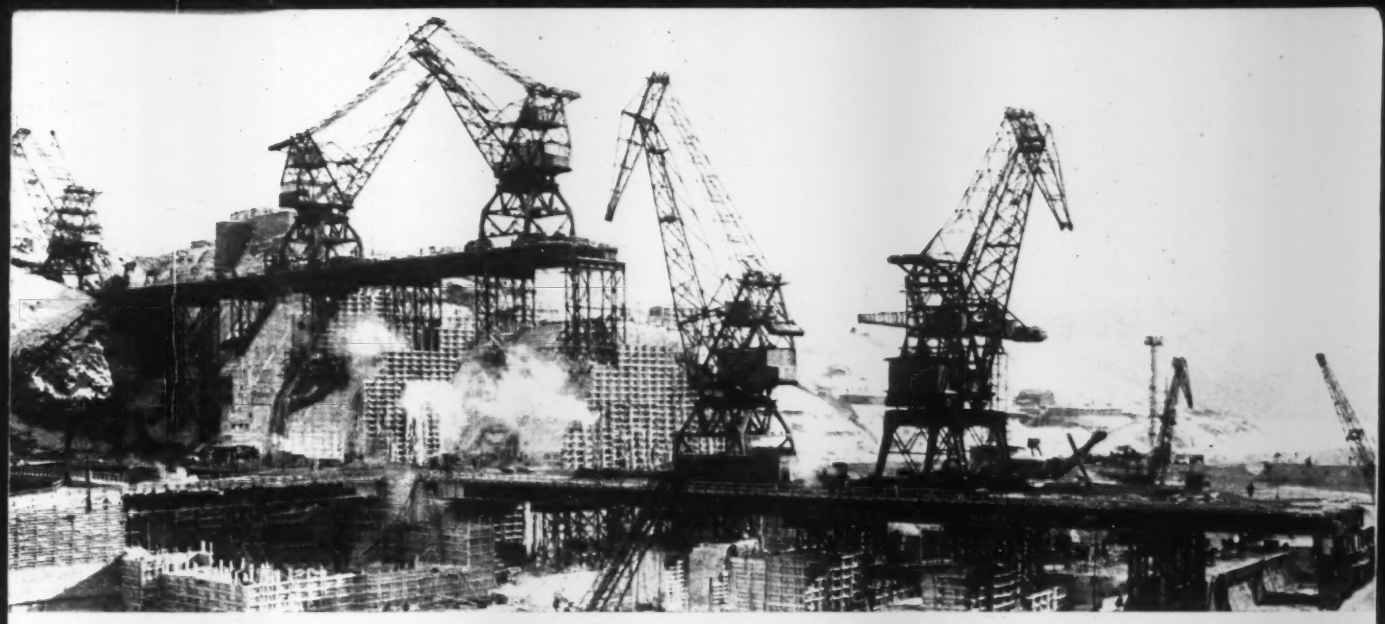
Would they make the same choice knowing what they know now about CE studies and job opportunities?

Most say they would.

Some are happy with the opportunities for constructive service they see in civil engineering. Many like the CE branch for its "general" nature; they call it broad, varied, versatile, diverse, practical. A surprising number apparently chose the field for their love of the outdoors.

The few disillusioned CEs of the Class of '59 call civil engineering stagnant: "It's the same as it was 50 years ago," claims one. A couple wish they'd had more business and management courses to go with their engineering. Some see need for a five-year program.

But most are happy—and nearly all hired.



Herd of Hammerheads Speeds Russian Dam

This concentration of cranes speeds concreting at Bukhtarminskaya Dam in the Soviet Union. Located on the Irtysh River in the Altay Mountains near the USSR-China-Mongolia border, the project will produce 540,000 kw. The dam will reportedly back up a reservoir 375 miles long and 9 to 12 miles wide. Bukhtarminskaya is the biggest of 13 Irtysh River hydroelectric projects in various stages of planning and construction. One 240,000-kw plant is complete, a 500,000-kw plant is under construction and 10 others totaling over a million kw capacity are planned.

Desalting Costs May Be Halved by '69

"Within five years the cheapest new supplies of fresh water southern California will be able to get will come from the sea."

With this prediction the new chief of saline water development in the U.S., V. T. Miller, M.D., sums up the aims of his agency's program.

Last week at the American Watershed Congress in Washington, D. C., Dr. Miller's boss, Secretary of Interior Fred Seaton, announced that the site of the nation's first demonstration plant for converting sea water will be on the Gulf Coast, as expected. This $2-million plant, using a long-tube-vertical-distillation process, will produce a million gallons of potable water a day (ENR Mar. 12, p. 24).

A second plant, using flash distillation, will follow in short order on the West Coast, probably in California. Three more plants using different methods will complete the 10-year, $10-million program launched by the Eisenhower Administration in search of a cheap way to desalt water.

For at least the next decade or so, conversion of salt or brackish water will be economically worthwhile only for regions with very poor or nonexistent fresh water supplies. But Dr. Miller believes that as research reduces the cost of conversion, and the cost of new natural supplies increases, conversion will become economical for an increasing number of communities.

Sometime during June the government will announce the specific site on the Gulf Coast, probably in Texas, where the first of the five big demonstration plants will be built. This plant will produce fresh water for about $1 per 1,000 gallons exclusive of distribution costs.

As the size of plants increases to 15 or 20 million gallons per day, Dr. Miller forecasts, the cost may be expected to drop to about 60 cents per 1,000.

Another possibility of dropping costs lies in nuclear energy. The second demonstration plant, also to be a $2-million distillery, will include experimental use of atomic energy as the heat source. If atomic fuel should become cheap enough, sea water conversion could become the salvation of many underdeveloped lands.

In the past few years, the cost of producing fresh water has been cut in half, Dr. Miller says. He anticipates that in the next 10 years it will be cut in half again. This would bring cost at the plant down to about 50 cents per 1,000 gallons; perhaps less. Most communities are now paying 30 to 40 cents.

"Some people in private industry are talking about 50-cent water from the sea," he says, "but I think right now they are a little optimistic."

Which of the conversion processes is most likely to yield the 50-cent water is hard to foresee. While distillation is the most advanced method at the moment, the three remaining plants to be selected will be based on other types of conversion—separation of salt with ion-selective membranes, rotary vapor compression, freezing, or solar distillation.

Some waterworks engineers quarrel with the cost picture painted by the government (ENR Apr. 16, p. 70). They point out that 50 cents per 1,000 gallons doesn't include distribution. But Dr. Miller replies that cities often don't figure in all their real capital costs in quoting prices at 50 cents. Moreover, where distribution systems are already installed and paid for, that cost does not have to be figured in, he says.

Interest in development of saline water, conversion has come not only from the arid regions of the U. S. More than 150 cities have asked to be considered as sites for demonstration plants.

For construction men, burgeoning federal activity in water desalting has important applications. At least a half dozen manufacturers are already quoted as ready to bid on large-scale distillation plants, and a number of engineering firms have been engaged in designing plants.

For Newark Airport:

Tower of Plastic

The dramatic structure between the two runways at the Port of New York Authority's airport in Newark, N. J., is a new control tower, which will be completed next month.

This unusual structure is circular at ground level, 78 ft in diameter. From this round base, a fan-shaped concrete shaft projects upward to support a 20-ft square control room with roof 150 ft above the ground. At about half this height a three-story pie-shaped construction juts out nearly 40 ft from the shaft. The four ribs of the fan-shaped shaft support the cantilever. And at the very top of the tower is a 17-ft-dia inflated-plastic sphere housing a radome (picture).

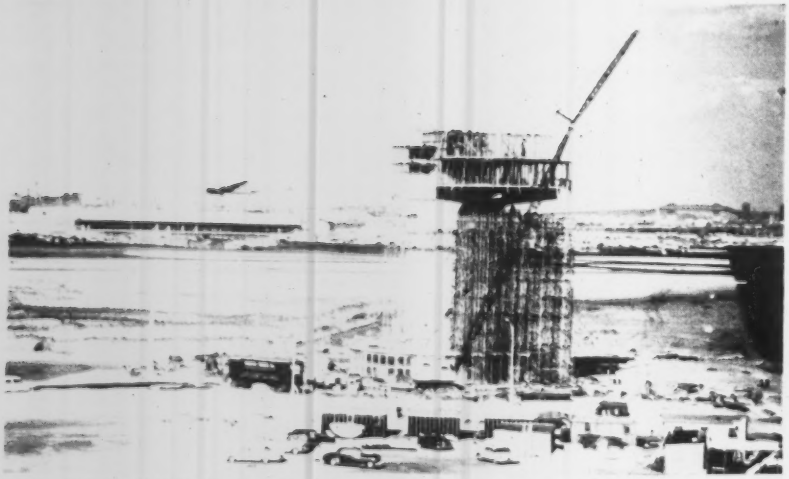
The midheight, pie-shaped projection, 65 ft wide, will provide space on its three levels primarily for control equipment and personnel. The concrete shaft encloses an elevator, stairways and utilities.

The tower is located in the center of the 2,300-acre airport. It will give Federal Aviation Administration controllers a better view of all parts of the two active runways than does the present 65-ft-high tower situated near one boundary of the airport. The new structure cost $1.75 million.

The FAA will staff the tower around the clock with a force of 75 controllers and other specialists. The tower provides six air traffic-control radio positions—two in the control room and four in the radar room.

About $1 million worth of equipment will be installed—20 radio transmitters, 22 radio receivers, direction-finding equipment and air-surveillance

CONTROL TOWER at Newark (N. J.) Airport is a fan-shaped shaft with cantilever.



STEEL-PIPE SCAFFOLDING shored the cantilever and provided platforms for concreting the shaft. Tower is 150 ft high.

LAMINATED PLASTIC was set in aluminum sash around occupied areas.

and Concrete

radar. In addition, the tower will control other navigation aids, including two instrument-landing systems, one omni-radio range, distance-measuring equipment and a telecommunication network.

Two separate sources of electrical power are supplied to insure continuous operation. The miles of intricate wiring needed for this complex electronics system will be housed in two 5x7-ft shafts in the interior of the main shaft.

Except for the control tower, which is enclosed in glass, occupied areas are sheathed in a translucent plastic supplied by Kalwall Corp., Manchester, N. H. Installed in extruded aluminum sash, these panels consist of two laminated sheets of glass-fiber reinforced polyester. This construction was selected because of its excellent thermal and acoustic insulation, sun control and evenness of lighting.

Construction of the unusually shaped concrete structure was facilitated by the use of steel-pipe scaffolding. It supported platforms from which workmen carried out forming and concreting operations and served as shoring for the midheight cantilever.

The new tower will be the fourth in the 29-year history of Newark Airport. The first was a small wooden structure only about 25 ft high. Signal lights were the only equipment available. It was replaced in 1934 by a 35-ft-high, radio-equipped tower, which was in turn replaced by the existing 65-ft-high tower, constructed by the Army Air Force during World War II.

A. Gordon Lorimer is the architect. Strobel and Rongved are the structural engineers and Slocum and Fuller, the mechanical engineers. Carl Bulit, Inc., is the general contractor. All are from New York City.

Aid for Students Is Aim Of New Connecticut Group

CABIEE spells scholarships and summer jobs for architectural and engineering students from the state of Connecticut. Those are the initials of the Construction and Building Industries Educational Endeavor, which has been organized in New Haven.

The idea was suggested by State Highway Commissioner Newman F. Argraves. Most of the money so far has come from contractor Joseph Mariam (ENR Sept. 25, 1958, p. 124). Mr. Argraves hopes CABIEE will spread to other states.

Over 100 applications for help have already been received.

A Case of Stilted English

Birmingham, England, planners designed the stilted look into this $4.9-million building for a good reason. It straddles a $42-million interior ring-road being cut through the center of Birmingham to ease traffic in the city's downtown area. The new building will include 23 shops, two large stores, a ballroom and three levels of parking space. Designers plan to extend the building on both sides after this first section is finished.

Around the Country . . .

• **Prestressed pavement comes high**—The Navy has dropped its plans for what would have been the most extensive prestressed concrete paving work in the U. S.—for a taxiway and apron at LeMoore Naval Air Station, Calif. (ENR Apr. 2, p. 28). The low bid—$2.1 million—was too high, Navy officials say. Now they're asking for bids on all but a fraction of the job in conventional concrete.

• **Job pickup**—Construction is the only major industry in the U. S. in which employment is up to where it was two years ago. More than 2.6 million construction workers were on the job in April, the Labor Department reports. The March figure was 2.4 million.

• **Mixed up mixer**—A driving range in Brooklyn, N. Y. uses a converted concrete mixer to launder as many as 50,000 golf balls per day. The pro at the range is a mechanical engineering graduate of Purdue who abandoned his slide rule for a putter. You can take the man out of engineering, but . . .

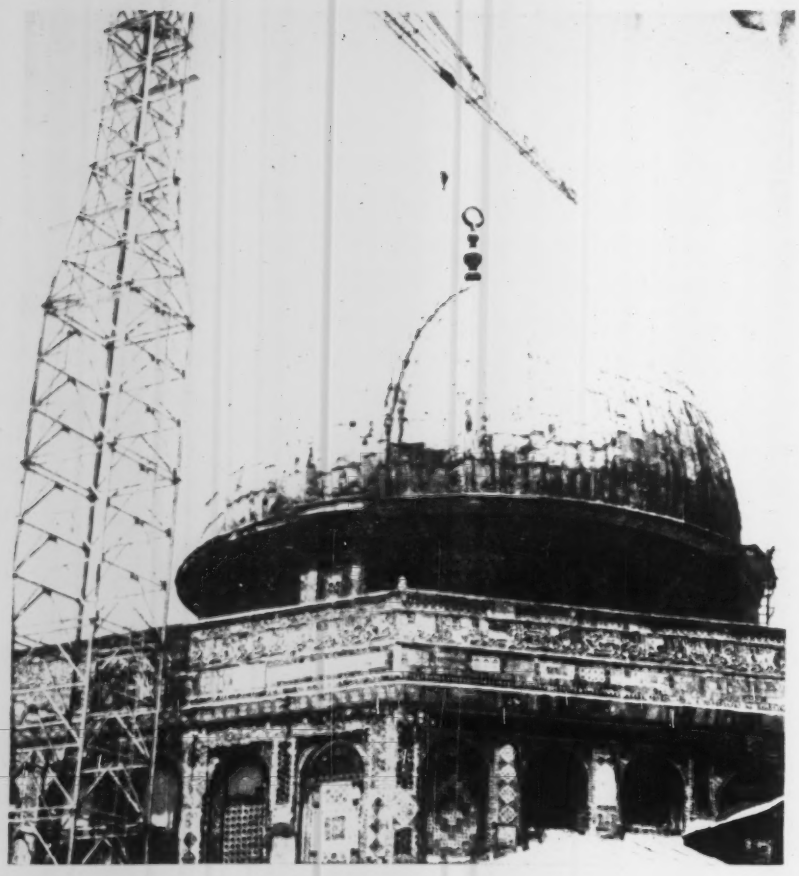
• **Industrial park plans**—A $40-million, garden-type industrial park is planned for Burlington, Mass. Burlington Associates of Boston are the developers.

• **Preparing building plans**—General Services Administration, Dallas, will have plans ready for bidders about July 17 for the $12-million to $17-million federal courthouse at Houston. Bids will be asked about August 28.

• **Federal building for Chicago**—General Services Administration plans for a second new federal office building in downtown Chicago. That one and the first—a combination courthouse and office building—will be designed by four Chicago firms: Schmidt, Garden & Erikson; Mies Van Der Rohe; Naess & Murphy; and A. Epstein & Sons, Inc. Cost is $83 million.

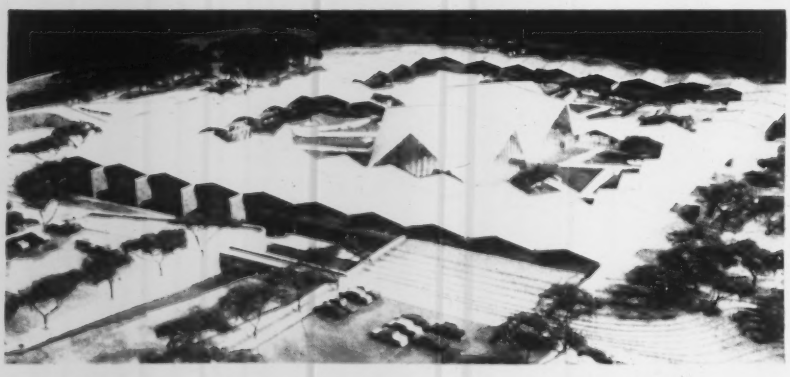
• **Airport expansion**—Plans for a $20-million expansion of the Detroit Metropolitan Airport include field improvements, construction of more hangars and doubling the size of the new terminal building.

• **Mt. Rainier power**—The Washington Public Power Supply System, comprising most of the state's public utility districts, has applied to the Federal Power Commission for a license to build a $5.5-million hydroelectric project on Lake Creek and Packwood Lake on the western slope of Mount Rainier.



Modernizing a Moslem Mosque

A modern crane hovers over "Harem Esh-Sharif" (The Omar's Mosque) in Jerusalem. The ancient cupola is to be removed and replaced by an aluminum covering during restoration work. The mosque was built in 691 A.D.



Cowboys Get a Home on the Range

A $1.1-million contract for the first section of the National Cowboy Hall of Fame was awarded to Tappet Brothers Construction Co. of Oklahoma City last week.

The 37-acre site near Oklahoma City will eventually have $5 million worth of buildings and other construction. The low structures with undulating roofs will be a museum. The tall, tent-like building will be the Hall of Fame.

Architects are Begrow & Brown of Birmingham, Mich., Sorey, Hill & Sorey of Oklahoma City are the engineers.

Narrows Start Set

Big span, three highways enliven NY construction

Four big and costly projects made the news in New York City last week. Three are highways cutting across the island of Manhattan; one is a bridge to Staten Island.

Construction will start June 17 on the $320-million Narrows Bridge between Brooklyn and Staten Island, the Triborough Bridge & Tunnel Authority and the Port of New York Authority announced.

It will be the world's largest suspension bridge, with a center span of 4,260 ft. It is expected to be completed in 1965. So will $125 million worth of approach roads, including the finally settled, controversial Brooklyn approach (ENR Jan. 8, p.24).

First work will be demolition and reconstruction of forts on both sides of the Narrows.

Final maps for the $82-million Lower Manhattan Expressway will be submitted to the Board of Estimate for approval in October, according to the Triborough Bridge & Tunnel Authority.

Construction is expected to begin in 1961.

The expressway will start at the Holland Tunnel and West Side Highway. It will run east as a 10-lane elevated highway about halfway across the island.

It will then split into two roads. One will be a six-lane depressed roadway that continues east to the Williamsburg Bridge. The other will be a six-lane elevated highway southeast to the Manhattan Bridge.

Construction of the eastern section of the 12-lane Trans-Manhattan Expressway will begin immediately under a $5.5-million contract, the Port of New York Authority announced.

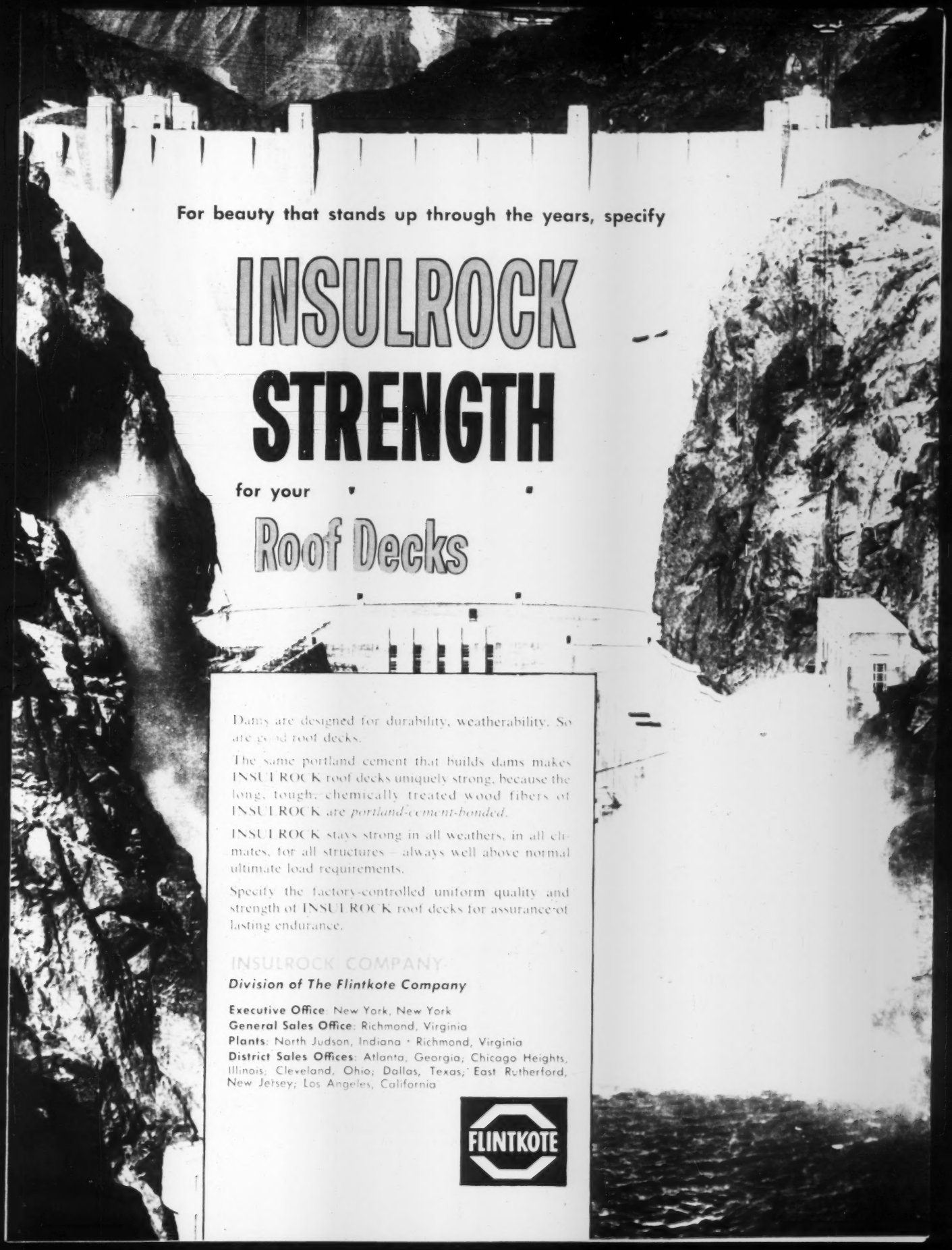
The expressway is part of the expanded approaches to the $183-million lower level being built for the George Washington Bridge.

The depressed expressway goes across the northern end of Manhattan, connecting the George Washington Bridge on the west side with a proposed bridge across the Harlem River on the east side.

The first two sections of the highway at the western end were begun last year under a $6.7-million contract.

The final project of the four is Robert Moses' pet and perennial Mid-Manhattan Expressway. The $97-million elevated highway would cut across the island at 30th St.

This project is brought up every year, and it is opposed every year. Opposition this year seems to be as great as ever.



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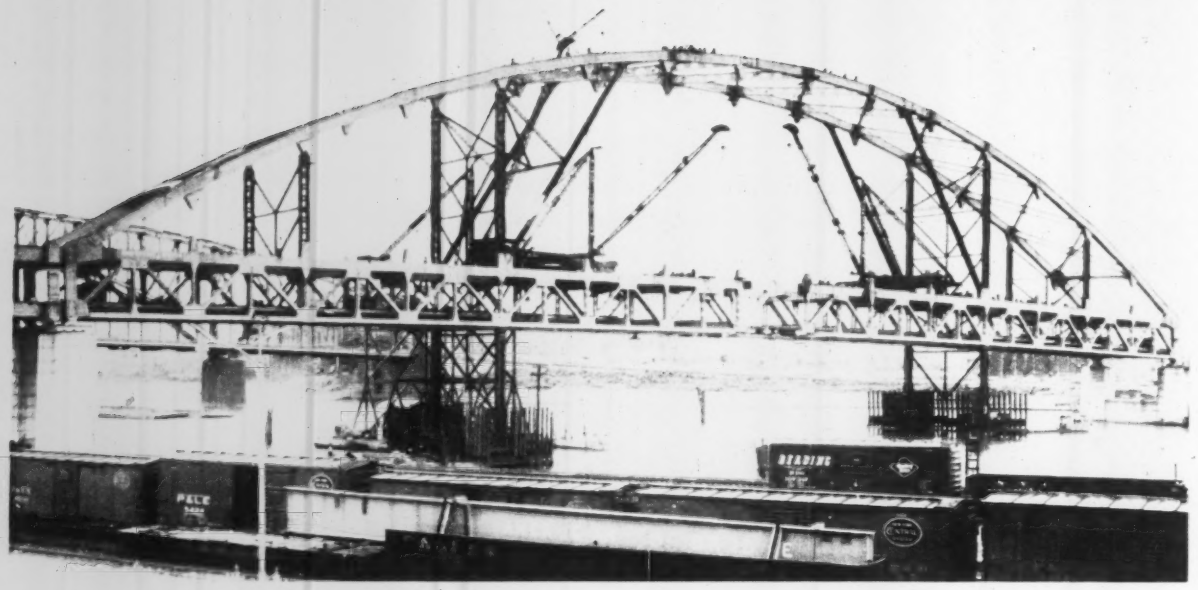


Fort Pitt Bridge, a link with Pittsburgh's Golden Triangle is . . .

A First in Bridge Construction

The world's first double-deck, tied-arch bridge probably the only arch tied by a truss will be opened to traffic this month in Pittsburgh.

The 750-ft Fort Pitt Bridge spans the Monongahela River near the Point of Pittsburgh's Golden Triangle. It links Penn-Lincoln Parkway West with Penn-Lincoln Parkway East. Each of its two decks will carry four lanes of traffic in each direction.

Some 8,500 tons of steel went into the construction of the $16-million bridge.

More than two-thirds of the weight is high-strength steel, which was used for the end floor beams, all arch chords and all of the truss members, except a few diagonals and verticals.

George S. Richardson, of Richardson, Gordon & Associates, Pittsburgh consulting engineers, designed the bridge for the Pennsylvania Department of Highways.

Design of the bridge was checked by electronic computer. Later a 100-to-1 scale steel model of the bridge was tested at the Thayer School of Engineering of Dartmouth College. The model test supported the theoretical study.

The substructure of the bridge is founded on rock about 50 ft below the normal pool level. Granite-faced piers stand 40 to 60 ft above the surface of the Monongahela.

American Bridge Division of U. S. Steel began work on the superstructure early in 1957. The builders placed falsework bents at 50 ft, 100 ft and 200 ft from each end of the span. Standard falsework was used for the first two bents at either end of the span. But special falsework that required 80 piles was needed for each of the bents nearest to the center of the bridge. These two main falsework bents were equipped with hydraulic jacks for making vertical adjustments during construction.

End verticals weighed 188 tons and measured 33 ft high, 21 ft wide and 3 ft thick. They were placed with the aid of a 120-ton stiff-leg derrick mounted on a 90-ft tower built on two barges.

The floating derrick was used for erection of the first four 25-ft panels at each end of the span. At that point, two traveler derricks moving on upper deck steel were also used by the bridge builders.

The arch could not be cantilevered out any great distance. Although the section was heavy, it was not proportioned for bending strength. Splices were only partial, because the arch was designed primarily as a compression member.

Vertical temporary supports for the arch were installed at the points of falsework support. As the arch neared closing, diagonal braces were installed. The arch rib had more flexibility than the truss.

Reactions at the main falseworks were heavy. The steel weighed over 10 tons per foot of bridge. To carry shear, several truss diagonals had to be bolsteted; high-strength steel was used instead of carbon steel.

Closure of the span required the use of jacks in the bottom chord at the midpoint. First the top chord was connected. Then, by lowering the bents at one end of the bridge, the arch rib was connected. Further lowering of these bents "swung" the span.

It was necessary to jack panel points apart at midspan to erect the closing section of the bottom chord. This jacking was required not only by the pre-stressed feature of the bridge, but also by the camber. The structure was pre-stressed by shortening the hangers to reduce the stress in the bottom chords.

The bridge's suspender cables each consist of four wire ropes. Each rope is 3¼ in. in diameter and has an ultimate strength of 475 tons.

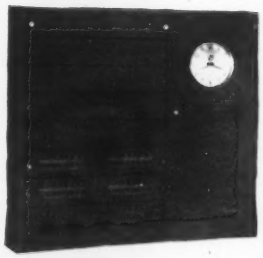
Penn-Lincoln Parkway West, which will connect Greater Pittsburgh Airport with the Golden Triangle area by way of the Fort Pitt Bridge, is almost complete. The only part of the 17-mile route yet to be finished is the Fort Pitt Tunnel under Mount Washington, which is expected to be opened in 1960.

Fort Pitt Bridge will link up with the tunnel, but motorists will be able to use it by way of various interchanges before the tunnel is completed and opened to traffic.

scope*

*STROMBERG CENTRAL OPERATIONS PANEL—ELECTRIC

Easily and economically installed, SCOPE conserves power, fuel and water, actually lengthens the life of associated operational equipment by tailoring "on" time to fit specific program requirements.



Now . . . from a recognized leader in the field of intricate timing devices and time control systems comes SCOPE (Stromberg Central Operations Panel—Electric).

SCOPE controls remote equipment *without* special or additional system wiring.

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With the addition of auxiliary panels, it can control up to 160 circuits on one electronic frequency.

Operating with *four* frequencies, a single SCOPE panel will control 640 circuits.

In any standard installation, SCOPE will "mastermind" the programmed operations of heating and air conditioning, lighting, clocks, audible signals, attendance recorders, time stamps, locks, pumps, valves and motors.

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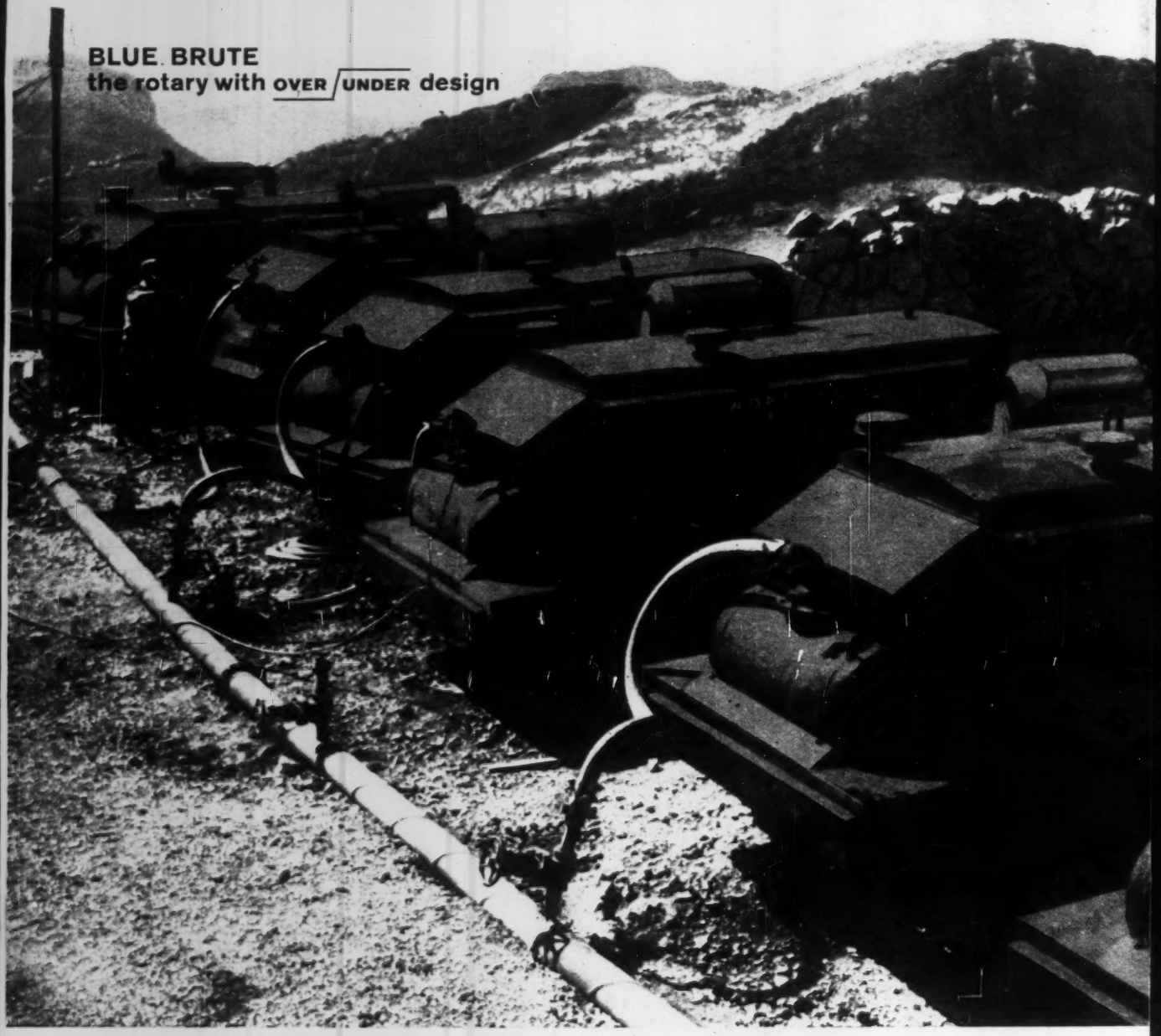
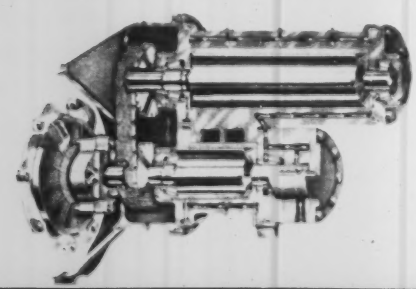
BLUE BRUTE
the rotary with OVER/UNDER design



A vital question to all rotary compressor users

Just what is OVER/UNDER*

Over/Under design. Many of the benefits of the Blue Brute rotary are a direct result of Over/Under design which puts the second stage of compression underneath the first.

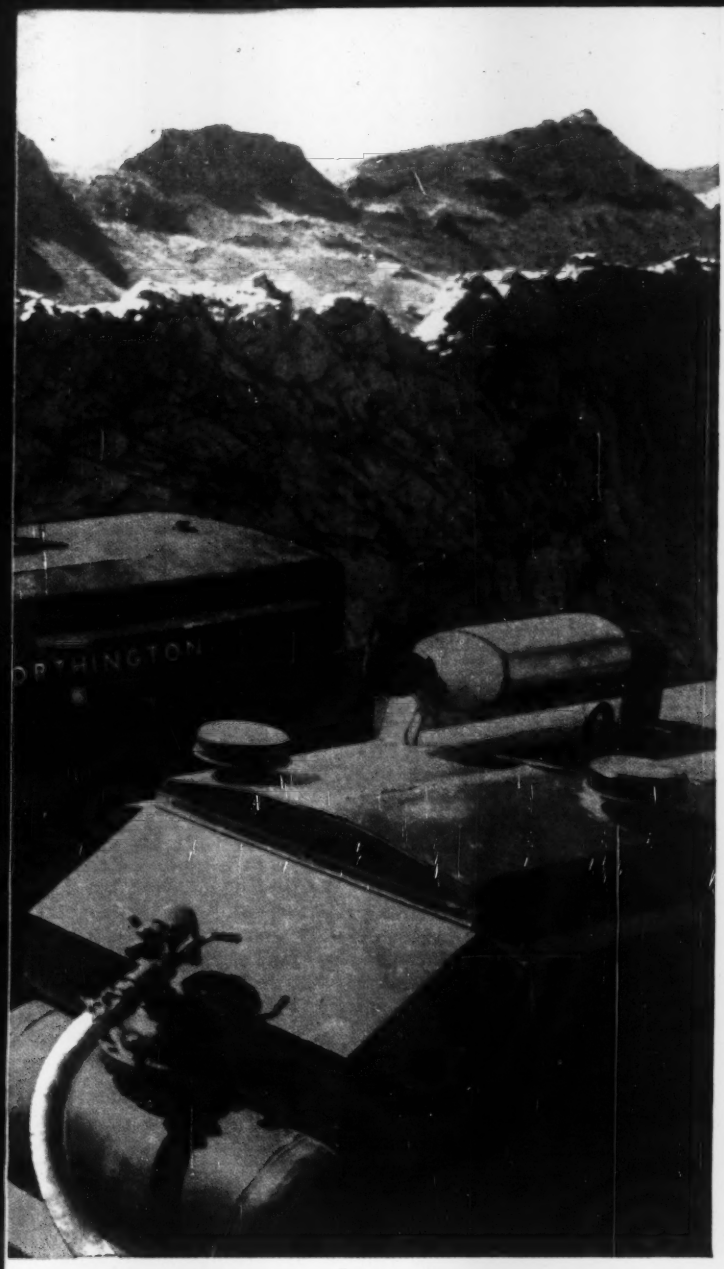


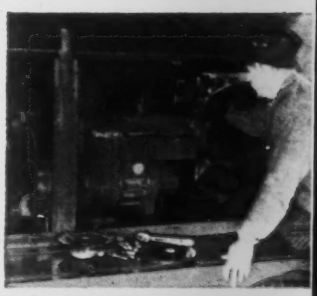
The engineer that designed the new Blue Brute rotary compressor had two choices. He could have taken the path of least resistance and produced a carbon copy of most other rotaries on the market. Or he could have tried for something better.

Worthington hires engineers not only for their creative ability, but also for their courage to attack difficult problems. Solution of the engineer assigned to this all-important compressor project was unique. He designed the Blue Brute rotary with the second stage of compression underneath the first—instead of end to end. (Our sales department calls this the "Over/Under" design.)

This Over/Under unit wasn't easier to design. Or to build. But it did have one big advantage. It resulted in a vastly improved rotary with many benefits for the man who owns it. The cylinders are self draining

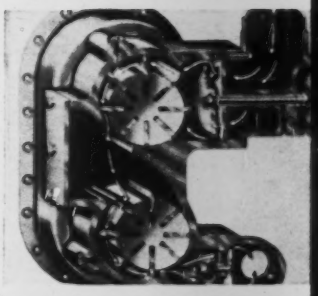
*Patent No. 2780406



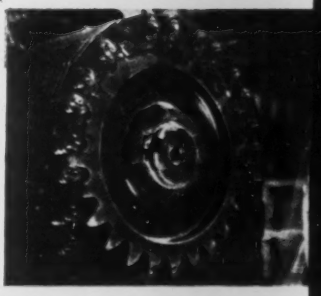


Easily accessible – all principal Blue Brute working parts can be removed and replaced using ordinary tools. With outboard end of each cylinder exposed you can make inspections and adjustments on the spot.

Easier starts, longer life are due to clutch which lets you warm up engine without engaging compressor. Easy for operator to engage, clutch adds years of extra life, saves hundreds of maintenance dollars.



Eliminates compressor blade damage by assuring proper draining of oil during shutdown. Self-draining cylinders permit gravity flow of oil so no sludge can collect to restrict flow, break blades.



Chain-drive life of many thousands of hours according to actual field tests. Extra heavy-duty chain proven to be reliable and durable on many types of construction equipment. Also, no shock problems thanks to prestretched chain.

More efficient oil separation cuts filter replacement costs. Two-stage design is: 1) lifetime Vortex unit which removes 95% of oil, and 2) vertical filter which removes remaining 5%, is inexpensive, easy to replace.

design?

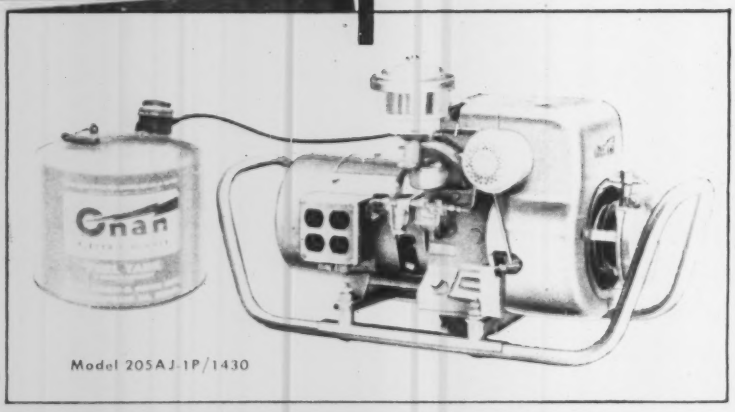
(stops clogging) and easy to get at for repairs. All principal parts can be removed for inspection and replaced in a hurry.

Our designer didn't stop there. He knew that rotaries are used in all sorts of weather and under all kinds of conditions. So he added a clutch that permits easy cold weather starts and longer engine life. He also knew that contractors have to worry about the little things that run up their costs. So he put in two oil filters, which save you more than $100 every time you need a filter change.

He also specified that Blue Brute rotaries be built in the most popular sizes—85', 125', 210', 315', 365' and 600'. Ask your nearby Blue Brute distributor for a demonstration. Or write: Worthington Corporation, Section 60-18, Holyoke, Massachusetts. In Canada: Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

NEW!
Onan portable electric plant *with* separate 5-gallon fuel tank!



Model 205AJ-1P/1430

Special 2,500-watt contractor's model combines light weight with dependability

Supplies 2,500-watts A.C. . . . enough for a crew of three men using electric tools . . . yet it weighs only 140 pounds!

New separate fuel tank holds 2½ times as much as regular mounted tank, saves refueling time. Fuel line is quickly detachable. You can move the plant without carrying along heavy fuel.

Ruggedly-built . . . quick starting

Powered by a dependable Onan 4-cycle, single-cylinder, air-cooled engine. Drip-proof, all-climate Onan generator is directly connected making a compact, rigid, smooth-running power package. No belts or couplings to cause trouble. Aluminum carrying frame, 4 plug-in outlet box, recoil starter and separate fuel tank are standard. Choice of 115, 230, or 115/230 voltages.

Many more models — 500 to 200,000 watts. Call the Onan distributor listed in your phone book or write —

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Onan ELECTRIC PLANTS

Divers Seal Cofferdam With Bags of Concrete

Divers are speeding a tough coffer damming job at the Corps of Engineers' John Dam Dam on the Columbia River. There isn't enough soil on the bedrock to anchor the steel sheetpiling for the cofferdam cells, so the divers are making up the lack with concrete.

They are placing 60-lb sacks of cement-sand mix along the inside of the cells in 40- to 50-ft of water. The divers go down in screened diving cages. The bags of cement and sand are chuted down to them on a flume. The divers pile the bags six high against the sheetpiling, then four high in a second row and finally two high. Thus sealed and anchored, the cell can be backfilled.

John Day is the final link in a series of dams on the lower Columbia that will provide continuous slackwater navigation from the Pacific Ocean to above Pasco, Wash. It is located about 25 miles upstream from The Dalles Dam. Other dams in the series are Bonneville and McNary.

John Day is the only dam below the Snake River designed for water storage and flood-control benefits. It will store approximately half a million acre-feet. Its 12 generating units will produce 105,700 kw each, for a total initial output of over 1.3 million kw. Total construction cost of the project is estimated at $350 million.

Morrison-Knudsen Co., Boise, Idaho, contractor for the north shore cofferdam, started work last fall.

Engineering Funds Asked For Pan-American Highway

The Pan American Highway Congress hopes to get approval for a financing plan that would begin completion of the last major link in the inter-American route.

At a meeting in Washington, D. C., last week the Congress adopted a resolution that calls for raising $5 million to conduct an engineering study needed to complete the 500-mile Darien gap between Panama and Colombia.

The resolution calls for the U. S. to furnish $2 million of the $5 million for the study. The remainder is to come from Panama and Colombia. A similar resolution was passed last year by the congress.

The U. S. Congress is reluctant to invest more money in the highway. Last year, when Congress appropriated $10 million for the road, many Senators and Representatives announced that it was the last time they would vote for money for the project.

The Pan-American Highway extends from Alaska through most of the South American republics.

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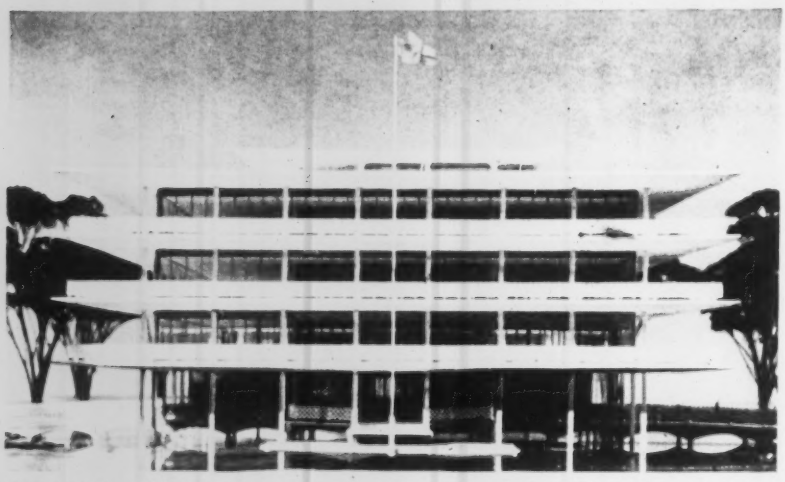
IRAQ—U. S. Embassy residence has folded-plate parasol built over flat slab roof to reduce heat load and heat transmission.



THAILAND—Wide roof overhang and projecting floor slabs mark Bangkok structure.

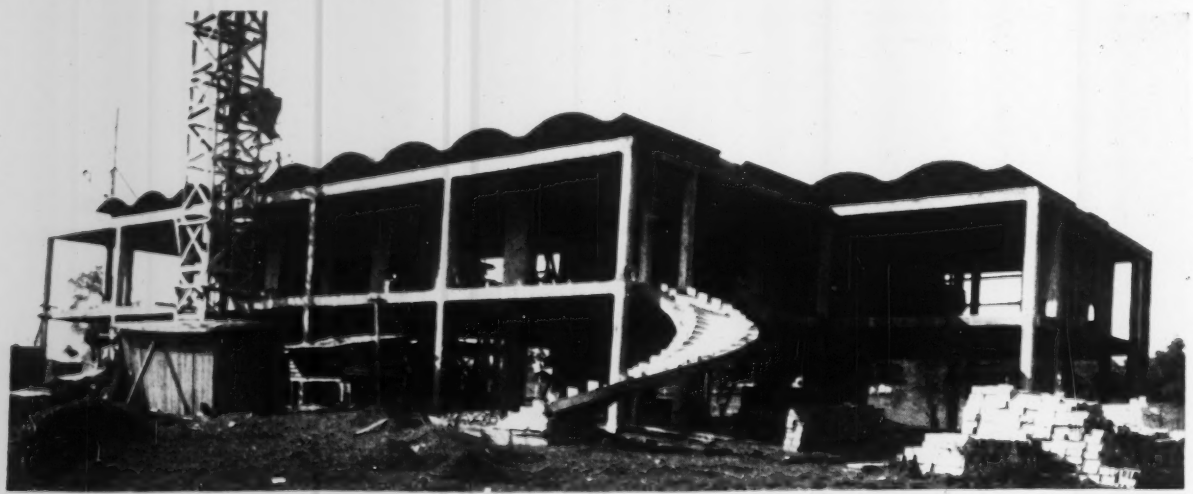
US buildings abroad . . .

Designing

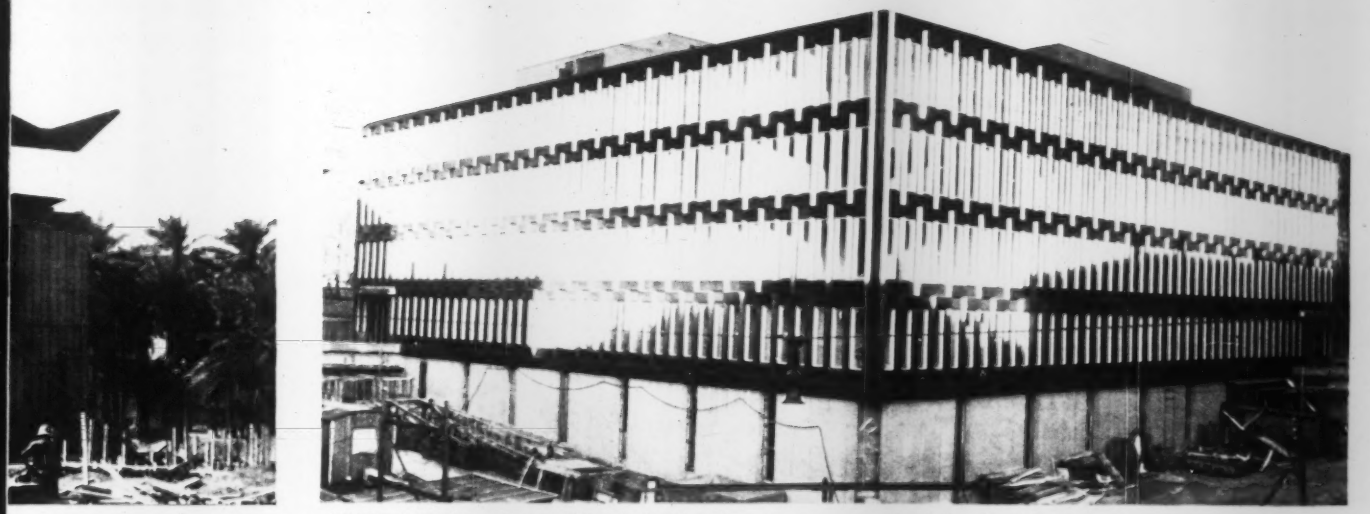
Design structures in a "style and form which are distinguished, will reflect credit on the U. S., and increase goodwill abroad . . ."

That's the formidable challenge hurled at the architects now engaged in the federal government's foreign building program. They are asked to meet that challenge by "intelligent appreciation, recognition and use of the architecture appropriate to the site and country."

Small in comparative dollar volume, but worldwide in effect, this three-



PARAGUAY—Embassy residence has corrugated double roof for cooling and architectural effect.



NORWAY—Oslo office building is faced with precast concrete simulating local stone.

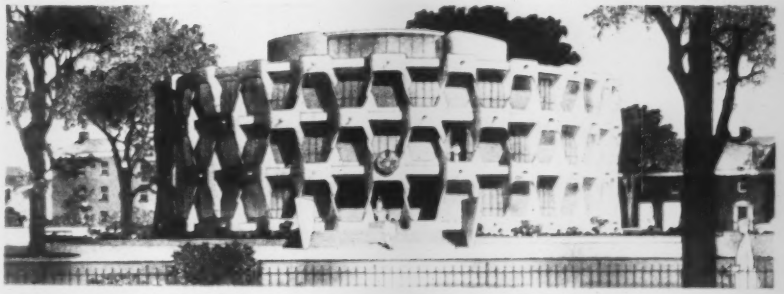
for Form, Function and Goodwill

year old building project is rapidly dotting the globe with U.S.-owned diplomatic and consular buildings of an unusual character.

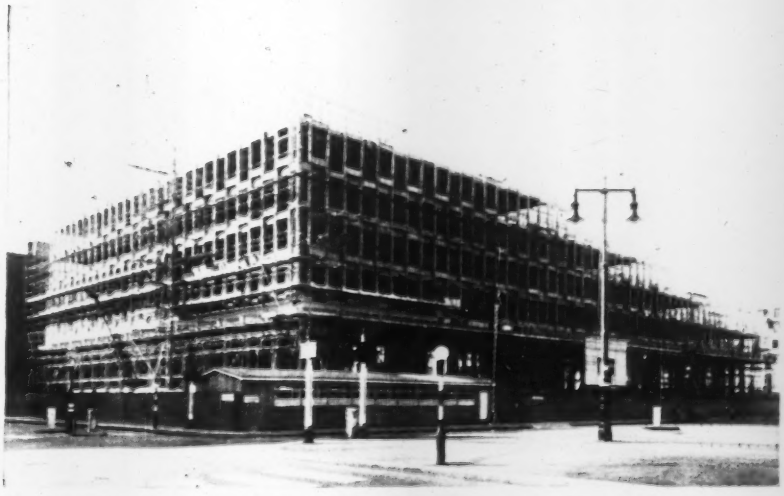
A 1956 charter written by Congress makes the program possible. Under this charter, the Foreign Buildings Office of the State Department has set up a management system for overseas construction of U.S. office buildings, residences and staff housing.

Some 23 structures are under contract this year at a cost of $25 million.

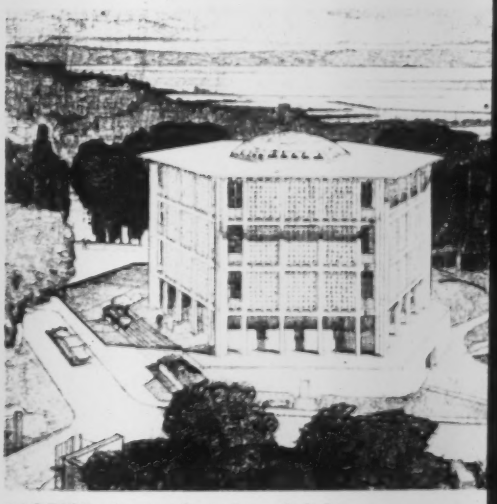
(Turn the page)



IRELAND—Walls of Dublin office building will be precast, resemble Celtic tower.



ENGLAND—London facade features grillage of precast concrete, no columns.



ALGERIA—A rotunda under a skylight.

FBO insists on quality, good practice and use of proven construction techniques and materials to produce an original modern structure that will be economical to erect, maintain and operate.

At the heart of the procedural plan for obtaining exceptional designs is a review and advisory panel of leading architects. The panel counsels the FBO in selecting the architect for each project, and then assists the chosen designer in developing his concept for the project.

FBO has had great success in getting recognized leaders of the architectural profession to serve on the panel.

They are men who have won the respect of their fellows for their proven ability, vision and imagination. Equally important, these architects have no personal axes to grind; they give their talents without compensation, purely as a service to their country and to the architectural profession.

Present members of the panel are Edgar I. Williams, New York City, Eero Saarinen, Bloomfield Hills, Mich., and William Wurster, San Francisco. Membership is rotated periodically. A career diplomat acts as chairman of the advisory group.

U. S. architects who want to design foreign buildings for the government file their brochures with the State Department. Professional accomplishment and demonstrated ability are the criteria on which FBO bases its final selection of architects.

When preliminary drawings have been completed by the chosen architect, the advisory panel holds a critique. The design may be amended, discarded and replaced many times until a final concept is produced that suits the country and site of the building and meets with the approval of the architectural panel.

FBO then—in collaboration with the local diplomatic or consular service post—takes bids from qualified contractors, awards the job, and sees construction through to completion.

Bidding interest so far has been restricted entirely to nationals of the host

Here's a Rundown on the US Foreign Building Program

CONSTRUCTION UNDERWAY

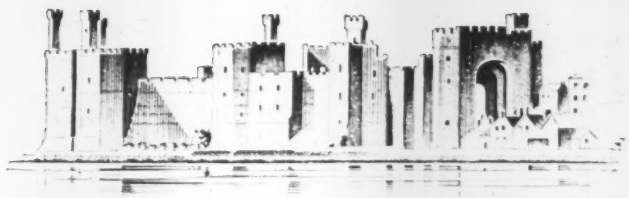
Post	Project	Architect	Estimated Cost
Athens, Greece	Office Building	Architects Collaborative (Walter Gropius)	$1,150,000
Karachi, Pakistan	Office Building	Richard J. Neutra and Robert E. Alexander	1,000,000
Lima, Peru	Office Building	Keyes, Lethbridge, & Condon	1,200,000
London, England	Office Building	Eero Saarinen & Associates	4,500,000
Oslo, Norway	Office Building	Eero Saarinen & Associates	900,000
Port-au-Prince, Haiti	Office Building	Oficina Don Hatch	470,000
Quito, Equador	Office Building	Vincent G. Kling	400,000
The Hague, Netherlands	Office Building	Marcel Breuer	1,000,000
Accra, Ghana	Office Building	Harry Weese	230,000
Nagoya, Japan	Office Building	Alexander S. Cockran	400,000
New Delhi, India	Office Building	Edward D. Stone	1,000,000
Asuncion, Paraguay	OB, Embassy Residence	Smith-Satterlee	700,000
Baghdad, Iraq	OB, ER Staff Housing ER	Jose Luis Sert	1,900,000
Manila, Philippines	OB extension	A. L. Aydelott & Associates	2,200,000
Manila, Philippines	Reproduction Center	Sherlock, Smith & Adams	425,000
Rabat, Morocco	OB, ER	Ketchum and Sharp	900,000
Tangier, Morocco	OB Officer Residence	Hugh Stubbins Associates	700,000
Belgrade, Yugoslavia	Staff Housing	Carl Koch & Associates	800,000
Djakarta, Indonesia	Staff Housing	Willgoos & Chase	400,000
Monrovia, Liberia	SH Officer Residence	Mills, Petticord and Mills	250,000
Seoul, Korea	Staff Housing	Ernest J. Kump	400,000
Vienna, Austria	Staff Housing	Henry Hill	1,000,000

PROJECTS IN BIDDING STAGE

Dakar, French-West Africa	Consulate Residence	Moore and Hutchins	200,000
Santiago, Chile	Embassy Residence	Paul Thiry	300,000

PROJECTS IN PLANNING STAGE

Algiers, Algeria	Office Building	John Lyon Reid	600,000
Bangkok, Thailand	Office Building	John Carl Warnecke	800,000
Dublin, Ireland	Office Building	John Mack Johansen	500,000
Fukuoka, Japan	Office Building	Clark & Buettler, George T. Rockrise, Assoc. Architects	250,000
Helsinki, Finland	Office Building	Harwell Hamilton Harris	1,000,000
Kabul, Afghanistan	Office Building	R. B. O'Connor and W. H. Kilham, Jr. Architects	1,000,000
Mexico City, Mexico	Office Building	Southwestern Architects Engineers, Associates	3,000,000
Palermo, Sicily	Office Building	Mario J. Ciampi, Allyn C. Martin, Paul W. Reiter, Associates, Architects	300,000
Rotterdam, Netherlands	Office Building	Victor Christ-Janer	300,000
Saigon, Viet-nam	Office Building	Curtis and Davis	1,000,000
Sao Paulo, Chile	Office Building	Mies van der Rohe	800,000
Singapore, China	Office Building	A. Quincy Jones and Frederick E. Emmons	500,000
Taipei, Formosa	Office Building	Anderson, Beckwith and Haible, Campbell and Aldrich	800,000
Mogadishu, Somalia	OB SH Officer Residence	Yerkes & Deigert	1,000,000
Niagara Falls, Canada	OB Officer Residence	Thornton Ladd & Associates	300,000
Ottawa, Canada	Office Building extension	Harold Spitznagel and Associates, Architects	300,000
Tabriz, Iran	OB POR Staff Housing	Edward L. Barnes	300,000
Tehran, Iran.	OB ext. ER Miss'n residence	Victorine & Samuel Homsey	900,000
Warsaw, Poland	OB Staff Housing	Welton Becket & Associates	2,000,000
Calcutta, India	Staff Housing	Willgoos & Chase	250,000
Manila, Philippines	Staff Housing	Alden B. Dow	500,000
New Delhi, India	Embassy Residence	Edward D. Stone	350,000



Caernarvon Castle, in Wales, built in 14th Century, has successfully defied all kinds of weather and the ravages of time. Caernarvon has never been taken by assault.

Wears like stone, durable as castles centuries old

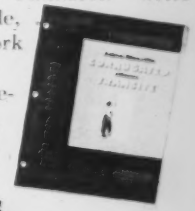
Corrugated Transite withstands all kinds of weather severity on the observation-tower walls at a modern airport.

Johns-Manville Corrugated Transite® resists weather and time

Like the famous old stone castles, thousands of original installations of J-M Corrugated Transite are still giving service and protection under conditions which destroy other forms of exterior walls, roofing and interior building materials.

Made of two practically indestructible minerals—ageless rock asbestos and cement — Corrugated Transite will not burn. It will not rot or rust. It has high resistance to acids, to gaseous fumes, to severe temperatures, to vermin and insects. Corrugated Transite actually becomes stronger and tougher with age. It is one of the most enduring building materials ever developed.

J-M Corrugated Transite is used in the construction of industrial buildings, offices, shops, churches, etc. Corrugated Transite can cover an entire building or it can be combined most effectively with other materials for modern architectural and decorative possibilities. It offers a way to save money on many types of construction and remodeling. For a 32-page illustrated booklet "CORRUGATED ASBESTOS TRANSITE" write to: Johns-Manville, Box 158, New York 16, N. Y. In Canada: 565 Lakeshore Road East, Port Credit, Ont.



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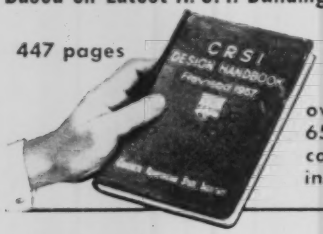

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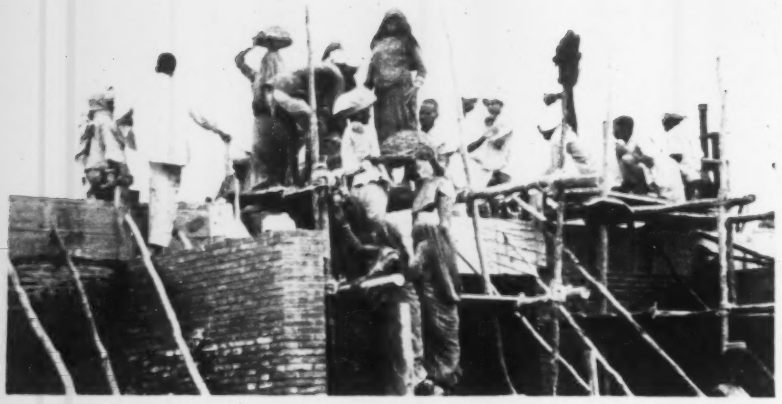


LABOR is provided locally. Here workers in New Delhi, India—both men and women—place concrete for $1 million U. S. office building.

countries. Payment in local currency is the strongest of a number of limitations that until now have kept U.S. contractors from undertaking these government jobs.

Other deterrents are the relatively small size of the contracts, and the necessity for training local workmen in techniques that may be new to the country.

Now this could change opportunities recently opened up for limited convertibility of Western European currencies. This gives rise to FBO hopes that U.S. contractors may want to get on the bidding lists for some projects due to be auctioned in the next year or two.

A string of 22 jobs scattered from Bangkok to Ottawa, at estimated costs of $250,000 to $3 million each, will be coming up for construction bids (see table p. 36).

Working with foreign contractors poses several problems.

Specifications must be kept short and simple because the bidders are going to be nationals of the host country. Drawings and specifications must be translated into foreign dimensions and terminology.

Local contractors are often unfamiliar with the advanced construction techniques and materials incorporated into the building design—such as precast and prestressed concrete or anodized aluminum.

Where such products are unknown, FBO field men educate the contractor and his workers in new practices. In some instances the field men may have to help contractors make out materials orders, schedule and expedite deliveries, and inspect products before they leave local plants.

Working under these conditions is difficult, but offers ample rewards. Local contractors learn new methods; Americans get cooperation and generate good will.

An Oslo newspaper, for example, noted that not only the contractor, but all Norwegian builders will benefit from experience gained on the U.S. building going up there. The structure was described as an experiment when the architect first laid his plans before Norwegian contractors. Now they are learning to form and place unusual concrete elements with great accuracy, and to execute other details that are new to them.

Congress cast the die for U.S.-owned foreign building (in preference to long-term leasing) when it passed the basic Foreign Buildings Act of 1926. This law charted the objectives, powers and responsibilities of the Department of State's foreign building construction operations.

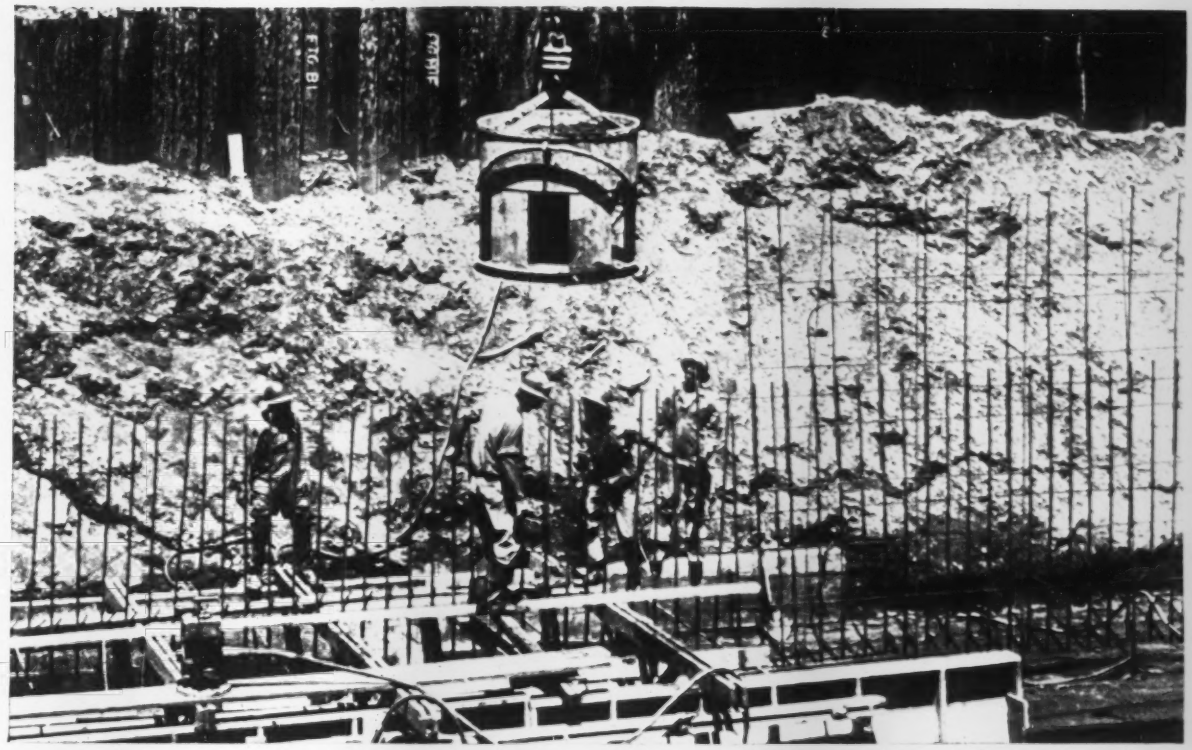
Following World War II, State and Congress teamed up in a joint effort to replace obsolete and ill-favored quarters overseas with efficient new buildings of a kind that would win a warm welcome.

This effort came to full flower in 1956 when Congress approved increased design and construction expenditures for 1957—the first year of a projected 10 year program that contemplates new buildings for some 150 foreign service posts.

Actual construction spending on the foreign buildings has been modest so far. In the current fiscal year, estimated expenditures for 23 projects under contract total only $6.8 million. Outlays next year are expected to increase slightly, to $7.35 million.

At current prices, some $100 million will be required to carry out the program.

The State Department this year is asking Congress to set the future of the plan by authorizing $100 million for five years, fiscal 1961 through 1965. Money to finance the work would continue to be appropriated by Congress on a yearly basis.



COLUMBIA-SOUTHERN CALCIUM CHLORIDE SPEEDS CONCRETING SCHEDULES, REDUCES COSTS

The addition of Columbia Calcium Chloride to the mix (2% by weight of the cement) gives you better concrete—faster. And it lowers your costs. Here's how:

Accelerates the set—At 70°F both initial and final set time are reduced by two-thirds. Time saved means faster finishing operations, finishers work closer to the pouring crew and afternoon pours can be finished without costly overtime.

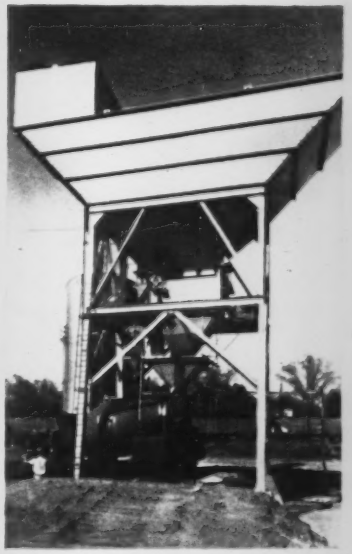
High early strength—Concrete with Columbia Calcium Chloride added has nearly double the strength after 24 hours as untreated concrete. It reaches 7-day strength in just 3½ days. Higher early strength allows removal of forms in one-half normal time, reduces number of forms required, permits quicker pouring of additional lifts.

Ultimate strength increased—After three years, comparative tests show a 9% increase in strength of calcium chloride treated concrete over plain concrete.

Improved curing—Columbia Calcium Chloride in the mix provides thorough curing. The use of integral calcium chloride with overnight wet burlap reduces moisture loss during the early hydration period, provides quicker release of normal heat of hydration, and accelerates the hydration process. By using Columbia Calcium Chloride, proper curing is "built-in"; there's no need to resort to costly continuous wetting methods.

Remember that the progress of the concrete construction sets the pace for the other trades. On any job . . . large or small . . . indoors or out, Columbia Calcium Chloride added to the mix keeps the job moving. It's easy to use. Calcium chloride can be added either at the batching plant or at the job site.

Save time and money! Specify Columbia Calcium Chloride on your next job. Contact our nearest District Office or our Pittsburgh address.



Columbia Calcium Chloride can be added at the batching plant or on the job site.

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CONCRETE PERFORMANCE REPORT

AIR FORCE

POZZOLITH concrete employed in new Air Force Academy to meet full range of engineering requirements for all types of concrete specified

Largest single construction project in U. S. Air Force history, the Air Force Academy Complex at Colorado Springs marks a milestone in modern concrete design and construction. Nearly 95% of the $114 million allocated for "pure construction" has gone into nearly 70 major building contracts—including over 4 million square feet of enclosed floor area. Construction at the 17,900 acre Academy site included the placing of some 800,000 cubic yards of concrete for buildings, retaining walls and bridges.

On-site concrete control lab—The Air Force Academy Construction Agency and the architects—Skidmore, Owings, and Merrill—jointly supervised all construction and established an on-site concrete materials control laboratory early in 1956. During July and August, 1956—with only a few thousand yards of concrete placed—they observed erratic and low compressive concrete strengths. The wide range and rapid changes in temperature were suspected as the cause.

Evaluation tests of concrete materials—In August, they engaged Commercial Testing Laboratories, Denver, to make comprehensive tests. Their tests clearly established that POZZOLITH would provide uniform, high strength throughout the wide range of temperature changes experienced between early morning concreting at about 50°F and mid-day concreting at 75° to 80°F. In September 1956, POZZOLITH was first employed in concrete at the Academy. Its successful performance here led the engineers to investigate the use of POZZOLITH for control of other classes of concrete—including lightweight aggregate concrete, prestressed concrete and structural concrete. *As a result of this investigation,* POZZOLITH *and only* POZZOLITH *was used as the water-reducing, set-controlling admixture for the project.*

2-mile retaining wall—Concurrent with concreting of foundation caissons, work began on 10,000 feet of concrete retaining wall that reached a height of 36 feet over much of its length.

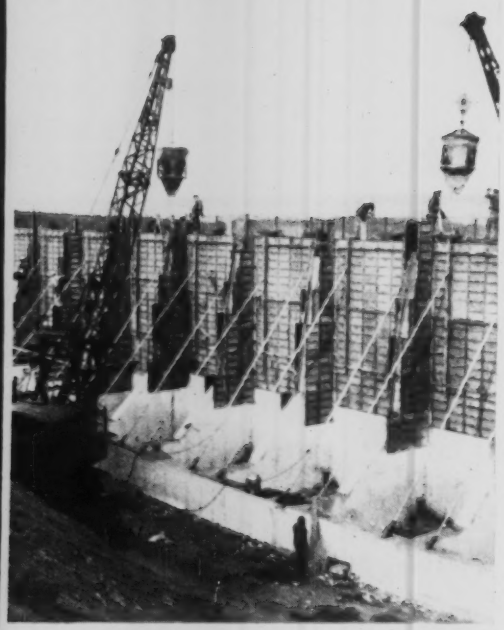
Design strength of the concrete required here was 5,000 psi at 28 days. With 1½" top size aggregate, 5 bags of cement, 36 gallons of water and POZZOLITH—a placeable mix of 2" to 4" slump was obtained that readily exceeded the 5,000 psi specification. Tremie trunks were used to limit the free fall of the concrete to 5 feet—maximum permitted by specifications. The mix was easily vibrated into place with no segregation or honeycomb. Retaining walls required approximately 24,000 cubic yards of concrete—supplied by a job site batch plant and delivered in ready-mix trucks. This mix met strength specifications and provided necessary workability for proper placement in the heavily reinforced, narrow forms.

Prestressed bridge girders—Construction work also included the erection of six prestressed bridges varying in length from 144 to 600 feet. There were two railway spans and four highway bridges—their girders standardized at 120 feet long in a modified T design, 71" deep. In all, 128 girders were manufactured. Sixteen shorter girders were erected for the two railroad bridges each of which consists of two simple supported spans of 72 feet each.

Concrete for these girders contained 7½ sacks of Type I cement, 1760 lbs. coarse aggregate (¾" top size), 1300 lbs. sand, 30.5 gallons of water and POZZOLITH Retarder.

This produced a cohesive, workable mix of about 2" slump and 4% entrained air. The POZZOLITH Retarder provided an initial retardation which permitted proper consolidation of the mix, yet accelerated early strength. Specifications called for a compressive strength of 4,500 psi before application of stress. This strength was achieved in three to five days, air cured. Stress was applied at that time. Concrete attained a compressive strength of approximately 6,500 psi in 7 days and well over 7,000 psi in 28 days.

Concreting bridge decks—Initial retardation was required in the concrete bridge decks to provide an initial delay in hardening so that the complete deck for each span could be completely



CONCRETE RETAINING WALLS reach 36 feet high over much of the 10,000 foot wall length. Tallest pours were made by giant overhead crane. Walls required approximately 24,000 cubic yards of POZZOLITH concrete—a placeable mix of 2" to 4" slump with design strength of 3,000 psi. Contractor: T. F. Scholes, Inc., Reading, Pennsylvania. Concrete Contractor: Long Construction Co., Denver.

AERIAL VIEW of nearly completed Air Force Academy. Construction under supervision of the Air Force Academy Construction Agency. Architects: Skidmore, Owings & Merrill, Chicago • Contractors include: Jack Adams & Haake Construction Co., Santa Fe, New Mexico • B. H. Baker Co., Inc., Colorado Springs • J. W. Bateson Co., Inc., Dallas • T. C. Bateson Construction Co., Dallas • A. H. Beck Foundation Co., San Antonio • Colorado Constructors, Inc., Denver • Dondlinger & Sons Construction Co., Inc., Wichita • E. & M. Construction Co., Denver • Elgas Construction Co., Colorado Springs • Farnsworth & Chambers Co., Inc., Houston • A. S. Horner Construction Co., Denver • Peter Kiewit & Sons' Co., Denver • Wade Lahar Construction Co., Tulsa & Denver • Long Construction Co., Denver • Matelich & Hanson, Inc., Englewood, Colorado • Robert E. McKee, Inc., Santa Fe, New Mexico • Mountain States Construction Co., Denver • Nowers Construction Co., Pueblo, Colorado • Frederick Raff Co., Colorado Springs • Ramsey-Leftwich, Lubbock • Saxet Foundation Co., San Antonio • T. F. Scholes, Inc., Reading, Pa. • Del E. Webb & Rubenstein Construction Companies, Phoenix • J. F. White Engineering Co., Englewood, Colorado • POZZOLITH Ready-Mixed Concrete: Concrete Materials, Inc., Kansas City • General Concrete Co., Colorado Springs • Transit Mix Concrete Co., Colorado Springs.

economically, for the broad range of job requirements and varied climatic conditions encountered at the site.

The Master Builders field men and the Company engineering staff worked closely with project engineers, the field control laboratory, contractors, and concrete suppliers to achieve the common goal of uniform, superior quality concrete at lowest cost-in-place.

For *your* job . . . with *your* materials POZZOLITH concrete is best. Neither plain concrete nor concrete with any other admixture can match the results you obtain with today's POZZOLITH.

On any current or future concrete projects, the local Master Builders field man will welcome discussing your requirements. Call him in. He's at your service—and expertly assisted by the Master Builders research and engineering staff—unexcelled in the field of concrete technology. Write us for complete information.

ACADEMY

poured before initial set occurred. This permitted full dead load deflection and achieved true composite action between girders and the concrete deck. Because the contractor wanted to use the completed decks as work areas in placing girders for the remaining spans, it was important that these slabs be placed into service at an early date. POZZOLITH Retarder provided the required, controlled initial delay in hardening and produced early strengths equal or better to what could be expected with a comparable plain concrete mix. At placing temperatures below 50°F, no extended delay in hardening occurred.

Lightweight concrete—Design of many of the buildings included lightweight aggregate concrete floors for the second, third and fourth stories—and concrete roofs. Preliminary mix designs indicated that with local lightweight coarse aggregates, natural sand for most of the fine aggregate and POZZOLITH—the 3,000 psi compressive strength specification could be met with 5 sacks of cement and air content maintained at 9% ± 1½%. This lightweight concrete had excellent workability and weighed approximately 105 lbs. per cubic foot, well below the 110 lb. maximum specified.

POZZOLITH and Master Builders field service—POZZOLITH was an important aid in meeting and exceeding specification requirements in over 750,000 of the 800,000 cubic yards of concrete at the Air Force Academy. For each of the many classes and types of concrete specified—it provided the required batch-to-batch uniformity, most

PRESTRESSED CONCRETE BRIDGE GIRDERS attained 28-day compressive strength of over 7,000 psi. Construction of all 144 POZZOLITH girders was by A. S. Horner Construction Co., Contractors, Denver. Consulting Engineer: L. Boduroff, Denver. Prestressing: Prescon Corp., Corpus Christi, Texas.

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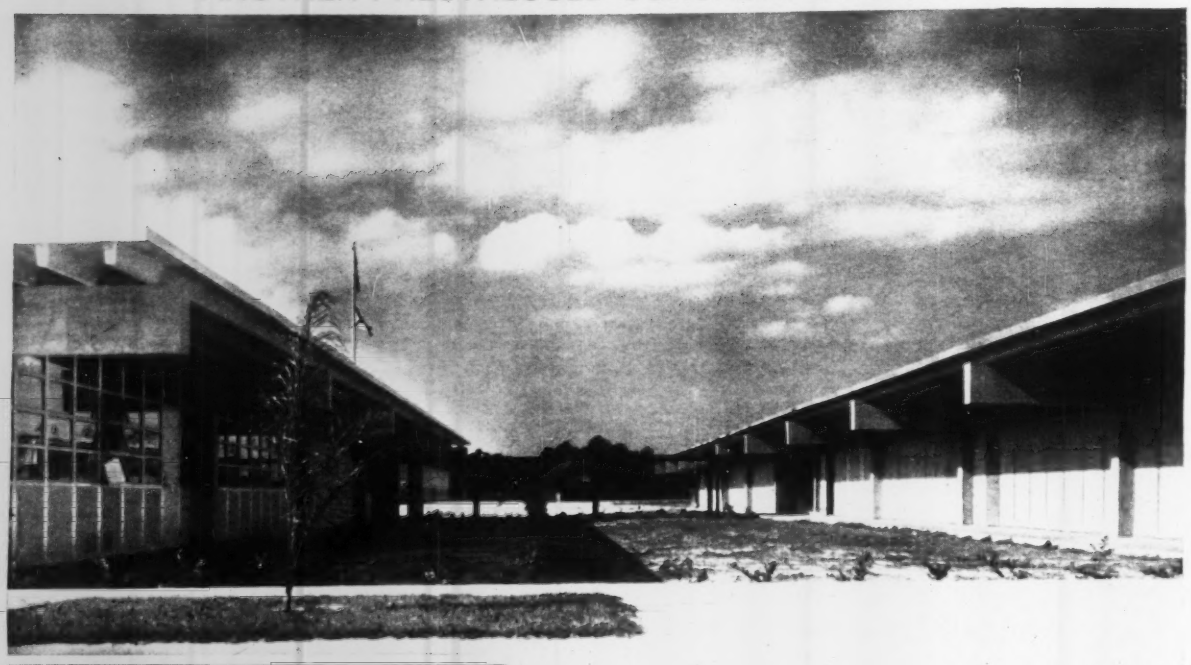
ANOTHER PRESTRESSED CONCRETE STRUCTURE



Normandy Elementary School, Jacksonville, Florida. *Architects:* George Ryad Fisher, A.I.A. and Harry E. Burns, Jr., A.I.A. *Contractors for 4 schools:* 1) McMaines Construction Co., Jacksonville. 2) East Coast Construction Co., Jacksonville. 3) Bay Construction Co., Norfolk, Va. 4) Wm. S. Smith Construction Co., Jacksonville. *Prestressed Concrete Fabricator:* Capitol Concrete Co., Prestress Div., Jacksonville.

New Prestressed Concrete Florida Elementary School Wins Design Award

Low completed cost prompts School Board to build 3 additional schools of same design

The greatest single requirement for the Duval County elementary school was economy of construction. In close order came fireproofness and ease and economy of maintenance.

The structure is approximately 35,360 sq ft in area and contains some 39,000 sq ft of prestressed Double T roof slabs. Over-all, the school represents about 300,000 cu ft at the contract price of $297,000; the cost per sq ft being $8.40. That's the cost benefit... there are others.

At the Sarasota regional conference of the American Institute of Architects in 1958, only one school was recognized for an award among various types of buildings from four states. This was the school.

Further, the $8.40 cost per sq ft, together with the fireproof and maintenance-free character of the building, *so pleased the School Board that it has seen fit to build it, with slight modifications, on three additional sites.*

You see how the success of prestressed concrete repeats itself? This local acceptance of prestressed concrete is being duplicated throughout the nation. Not only in schools, but in office buildings, garages, warehouses, motels, bridges, piers, factories and transportation terminals.

Because Roebling pioneered in the development of prestressing elements and techniques in the United States, we have much to tell you and a wealth of information and data to share with you. Your inquiry can be as general as "...all about prestressed concrete," or as specific as "...tensioning elements and casting bed data." In any case, we will be glad to furnish you with whatever you wish. Just address *any* inquiry to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Consult Roebling... *First* in the U. S. with prestressing and tensioning elements

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More than a million cu yd of fill and 4,000 sheetpiles make up . . .

An Ocean Terminal in Minnesota

Sheetpile and earthfill are turning a barren 50-acre peninsula into a 120-acre marine terminal at Lake Superior's Duluth-Superior Harbor, the westernmost port of the St. Lawrence Seaway.

The $8.4-million project, begun in early 1958, will provide berthing space for ten 500-ft ships. Two 500x150-ft transit sheds, a 300x150-ft warehouse, a 500-ft open berth and two 90-ton gantry cranes are included in the initial phase of the project.

The terminal will have six more transit sheds, four more warehouses and an additional open berth in subsequent stages of its development. These facilities will cost $9.6 million, bringing the total cost to $18 million.

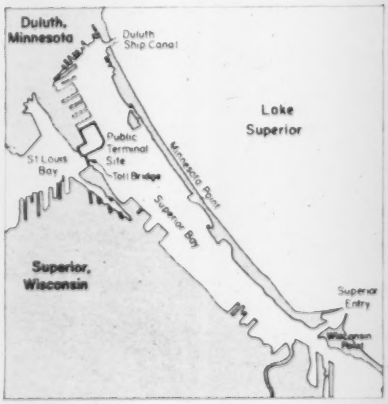
The basis of the public terminal was a peninsula at the end of Duluth's Rice's Point in Superior Bay. Zenith Dredge Co., Duluth, contractors for the bulkhead and fill, drove 4,000 58-ft, ZP 38 steel sheetpiles in the firm sands of the harbor to form three sides of the rectangular terminal. The bulkhead measures 1,600 ft along the north side, 2,700 ft on the east and 1,700 ft on the south.

The piling is driven 20 ft into the harbor floor. Depth of the water at the terminal site is 30 ft. The top of the bulkhead is 8 ft above mean low water.

A conventional wale and tie rod system extends back 70 ft to a bearing pile anchor system that is tied together by reinforced concrete beams. Bollards are supported from the steel sheetpiling and anchored to the bearing pile anchor system. The 1.1 million cu yd of fill was hydraulically placed and borrowed from the harbor channel.

The south and east sides of the terminal are on open water. On the north side, a slip, now 90 ft wide and 900 ft long, is being enlarged to 325 ft wide and 1,600 ft long and dredged to a depth of 30 ft. The first transit sheds, warehouse and open berth are built along this slip.

A 35-ft concrete side apron separates the transit sheds from the bulkhead.



TERMINAL is in Duluth-Superior Harbor.

No railroad tracks will be placed on the apron. The upland side of the transit sheds is arranged for both railroad and truck loading from a covered, 20-ft loading dock. Warehouses will have similar docks on all sides. Bascule-type bridges will enable fork-lift trucks to travel over railroad tracks between warehouses and transit sheds.

Transit sheds and warehouses have steel roof trusses and columns and insulated metal panel walls. The floors are concrete and the walls have 6-ft high exterior concrete wainscoting.

Duluth-Superior Harbor handles a greater volume of cargo than any other Great Lakes port. Situated in the southwest tip of Lake Superior, some 1,000 air miles from the Atlantic Ocean, it is sheltered from the turbulence of the Lake by a natural sand and gravel breakwater. The breakwater is nine miles long and one-half mile wide.

The Soo Line will expand its existing rail facilities in the area and send eight tracks into the terminal.

The Minnesota Legislature authorized an expenditure of $5 million by the state, $4 million by St. Louis County, and $1 million by the city of Duluth for construction of the seaway facility. Additional monies will be appropriated by the Duluth Port Authority, builders of the terminal.

Pfeifer & Schultz, Minneapolis, are engineers for the entire project.

at your service at Orange, Texas —

Modern, Complete Plate Fabricating Facilities

Our modern Orange, Texas, plant, one of the largest plate fabricating facilities in the country, is now producing all kinds of custom plate work—including stacks, pipe, bins, tanks and heavy-wall pressure vessels. And, being located on water, rail and truck routes, delivery is fast and shipping costs are low.

The plant is a two-aisle building, 177′ wide and 750′ long, with extended crane runways of 270′ and 200′ lengths at either end. Equipment includes seven cranes capable of lifting, in combined use, over 100 tons; large car bottom-heating and stress-relieving furnaces; heavy plate-bending rolls; a variety of presses and press brakes; the latest in welding and X-raying equipment, plate shears, edge planers, boring mills and drills. An inquiry to the nearest contracting office will bring detailed information.

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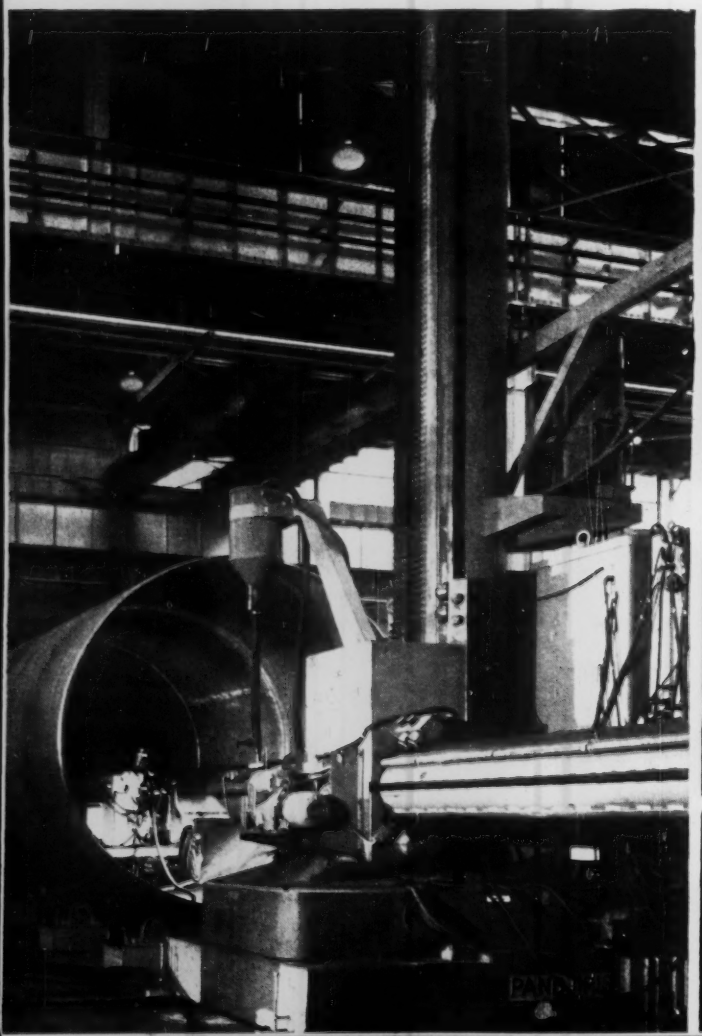
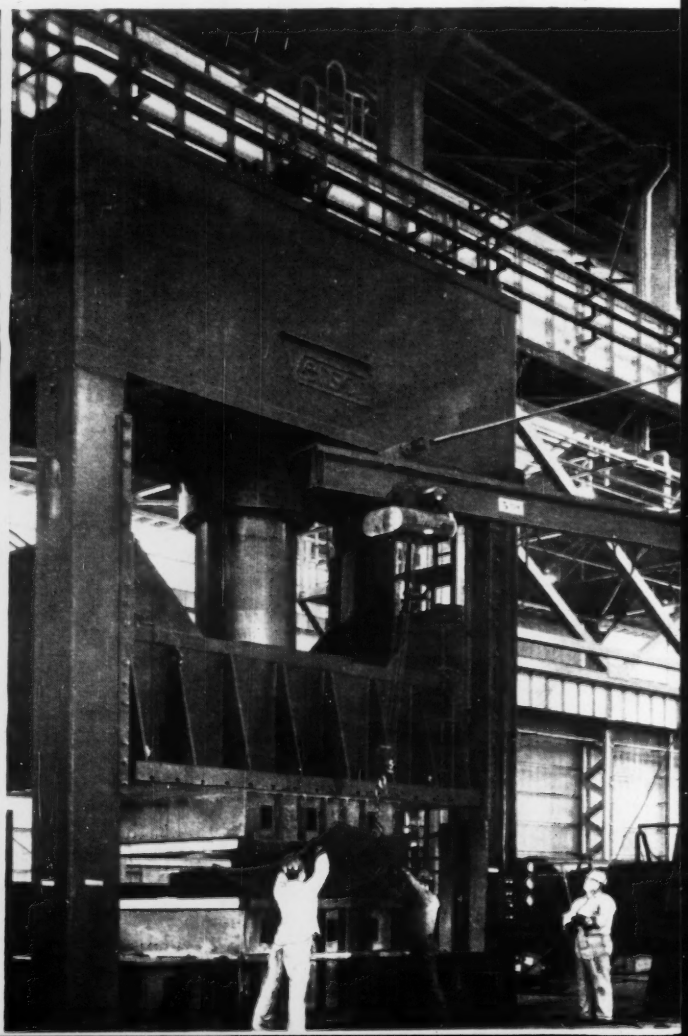
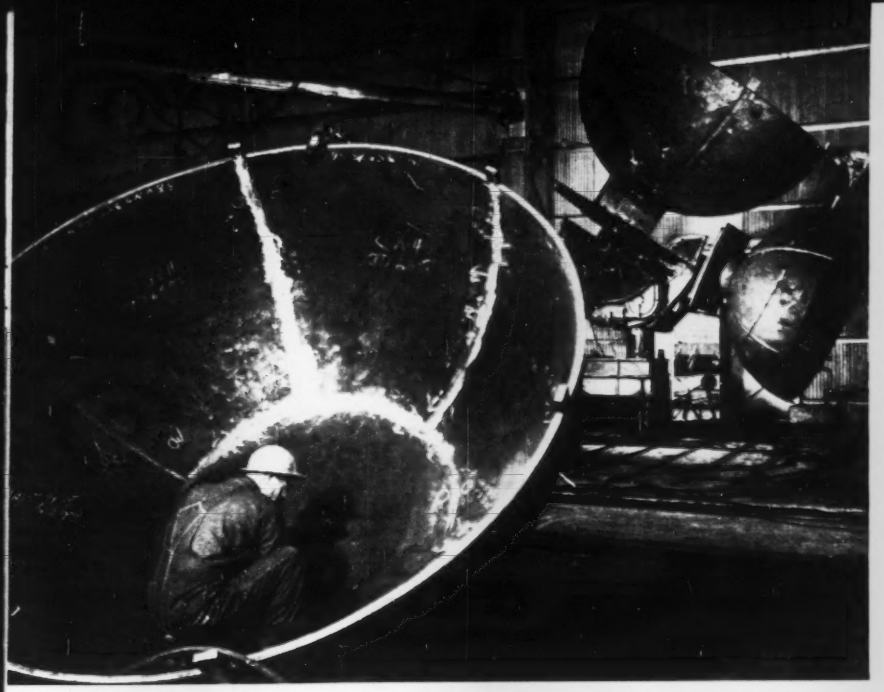
Automatic welding inside circumferential butt joint of two 1⅞" plates with boom welder.



Pressing 1¹⁵⁄₁₆" plates on 2000-ton press for hemispherical heads.



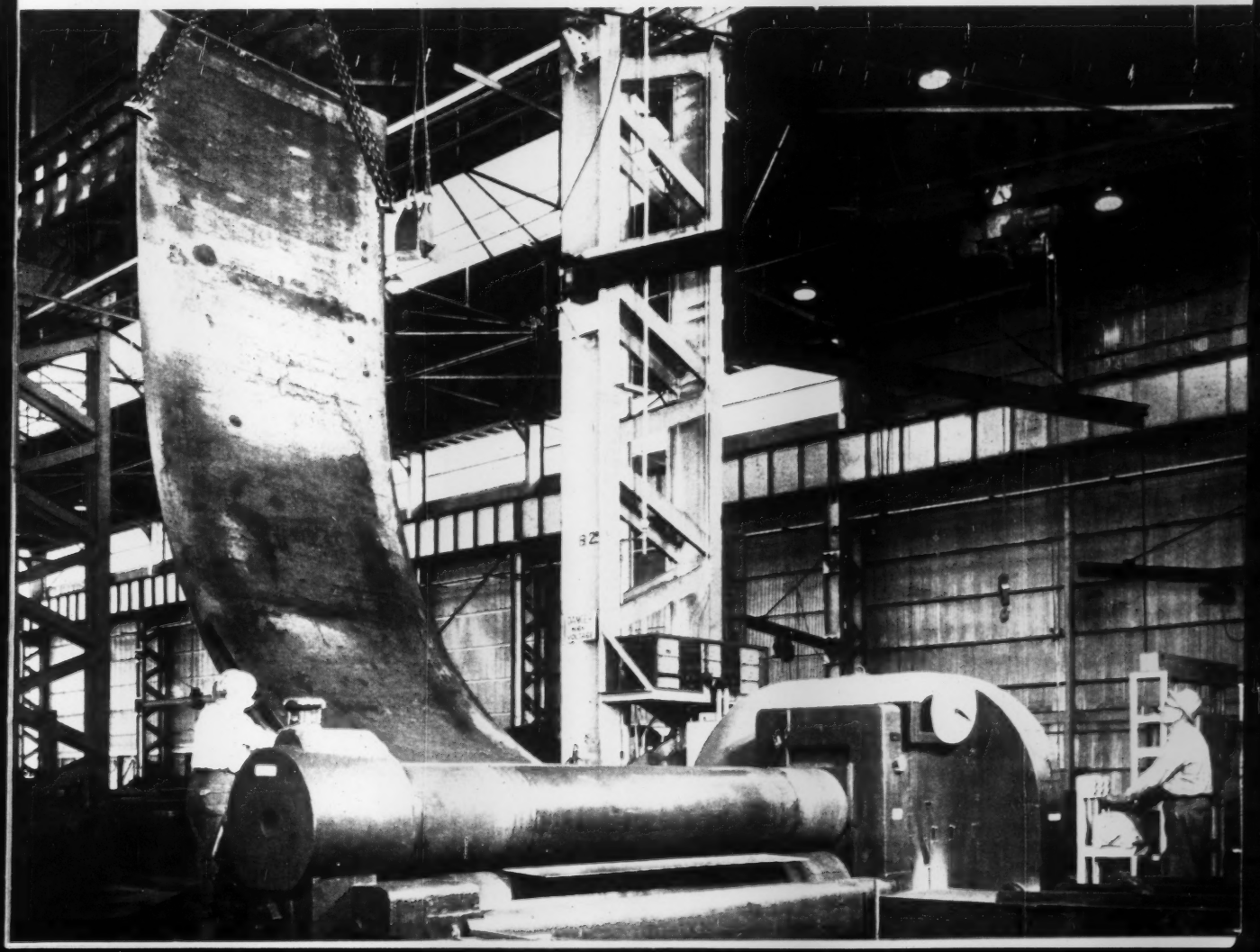


Inside of 9'-6" dia. x 1 1/16" thick hemispherical head being ground smooth.

Complete Construction Service

Possessing the most complete range of construction equipment in the industry and skilled personnel backed by over fifty years of experience, American Bridge is prepared to erect any product it fabricates.

Rolling 96" wide x 1/16" thick plate for knock-down storage tank.



The new Town and Country Motor Hotel was designed by Guy J. Seghers and A. Charles Occhipinti, associate.

Erection was faster, insurance rates lower with Penmetal Structural Framing and

STEELDEK

"The steel framing system was pre-engineered and fabricated for maximum speed of erection. All members were cut to length, delivered and placed on the jobsite for immediate erection by mechanics with average skill. From the date the order was placed, less than three weeks elapsed before all materials were on the job." These are the words of James T. Doyle, steel erector for the new Town and Country Motor Hotel, Bossier City, Louisiana.

By changing the original designs for this project from wood to Penmetal steel framing, insurance coverage was obtained at a saving in premiums of $4,000 per year. This will soon pay for the slight additional cost of the steel.

Further savings resulted from the use of Penmetal STEELDEK. Initial cost was low and, because of its light weight, loads on structural members were reduced, permitting lighter designs.

Ask for data on this steel framing of economy. Send for a copy of catalog SS-27.

STEELDEK was nailed to the Penmetal steel joists. Light weight makes it easy to handle. The rigid sheets fit quickly into place.

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a name to remember

PM-210

Steel space frame transmits stress to foundations over several paths as . . .

Hidden-Arch Roof Eliminates Columns

Hidden-arch space framing has cut steel requirements and provided a column-free playing area in a physical education building for the Murfreesboro, N. C., high school.

The gymnasium is 112 x 81 ft, without any interior ties or columns. The space frame is supported by 12-in.-thick longitudinal masonry walls and a 6-in. pipe column at each corner of the building.

The consulting engineer chose the space frame instead of a conventional truss design because it provided simpler foundations, more economical construction, greater architectural freedom and a 30% reduction in the number of connections. This type of construction had been used successfully before in California (ENR March 24, 1955, p. 55).

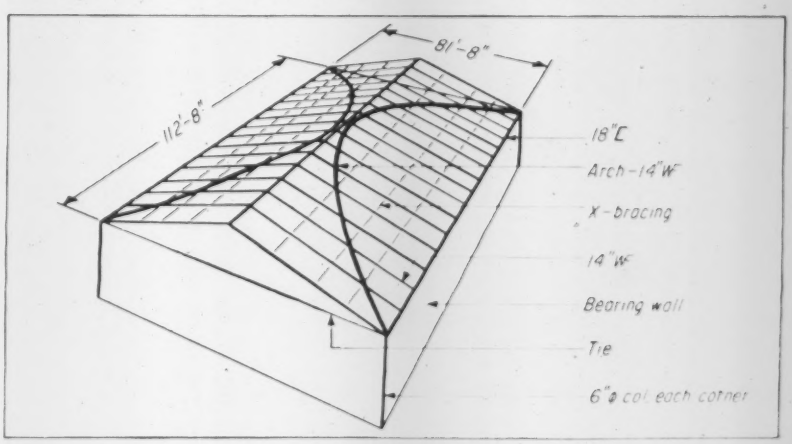
Author E. E. Hanks *is District Engineer for the American Institute of Steel Construction of Greensboro, N. C. An authority on fireproofing of steel and building-code provisions governing steel design and erection, he was formerly contracting manager of Atlantic Bridge Co., general manager of Joliet Bridge Co., and construction engineer for steel erection, Camp Lejeune, N. C.*

• **Novel load distribution**—The major elements of the steel roof framing are A-frame bents, which establish a 4 on 12 roof pitch, and two parabolic arches in the plane of the roof. Longitudinal and transverse ties at the wall and angle bracing complete the framing.

The vertical component of the roof weight on the A-frame bents is taken by the longitudinal walls, and the thrust in the plane of the roof applies normal loads to the parabolic arches in the plane of the roof. The reactions of the arches at the corners are taken by longitudinal and transverse ties and corner columns.

The column analogy method was used in computing the stresses in this system.

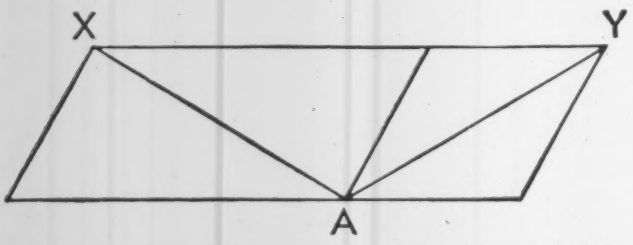
(*Turn the page*)



HIDDEN ARCH resists thrust in the plane of the sloping roof, while rafters carry vertical components of the loads to the walls.

TRICKY TRACINGS

Can you tell, at a glance, whether AY is shorter than, longer than, or equal to AX? See answer below.



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. . . Hidden-arch roof

• **Deft fabrication and erection**—Because of the extremely close fit required in the structural roof members, special precautions had to be taken by the fabricator during work on the steel in the shop.

About one-quarter of the roof frame was assembled in the shop before shipment to check the fit of the members and dimensions.

Because the A-frames are supported on unbraced masonry walls, 17 ft high and 112 ft long, lateral movement during erection had to be limited to a ¾ in. to avoid damage to the walls. Each of the 17 A-frame sections were welded on the ground. A temporary cable tie, running the length of the members from wall to wall, was installed before placing the A-frames on the wall.

After the A-frames were placed on top of the walls, dimensions were carefully checked and the cables adjusted as necessary.

Angle bracing was placed between each A-frame member as it was placed on the walls. After all A-frames were placed, the erector put the arch members in place, starting from one end and proceeding until he reached the other end.

The erector had to check all dimensions as erection progressed. The consulting engineer carefully checked the frame before preliminary tightening of the high-strength bolts used for connections and again after all bolts were finally tightened. He then gave permission to release and remove the temporary tie cables.

When the cables were released, no lateral movement of the walls was apparent. The spaceframe roof framing was then covered by a cast-in-place gypsum roof deck.

This system provided an attractive, unencumbered overhead framework for the roof. Preliminary cost studies before bids were taken on the project showed that the difference in exterior wall heights and the elimination of additional dead heating space made this method less expensive than the familiar bowstring truss and rafter construction. The playing area is daylighted by skylights. Ventilation in the building is mechanical.

The architects for the structure were Jesse M. Page and Associates of Raleigh, N. C.; Ezra Meir and Associates, also of Raleigh, was the structural engineer. General contractor was East Carolina Construction Co., Dunn, N. C.

Structural steel for the space frame roof was fabricated by Peden Steel Co., Raleigh, N. C., and erected under a subcontract by George E. Newton Co., Greensboro, N. C.

Progress Report on STEEL CONSTRUCTION

JUNE, 1959

BETHLEHEM STEEL

BETHLEHEM FABRICATED STEEL CONSTRUCTION

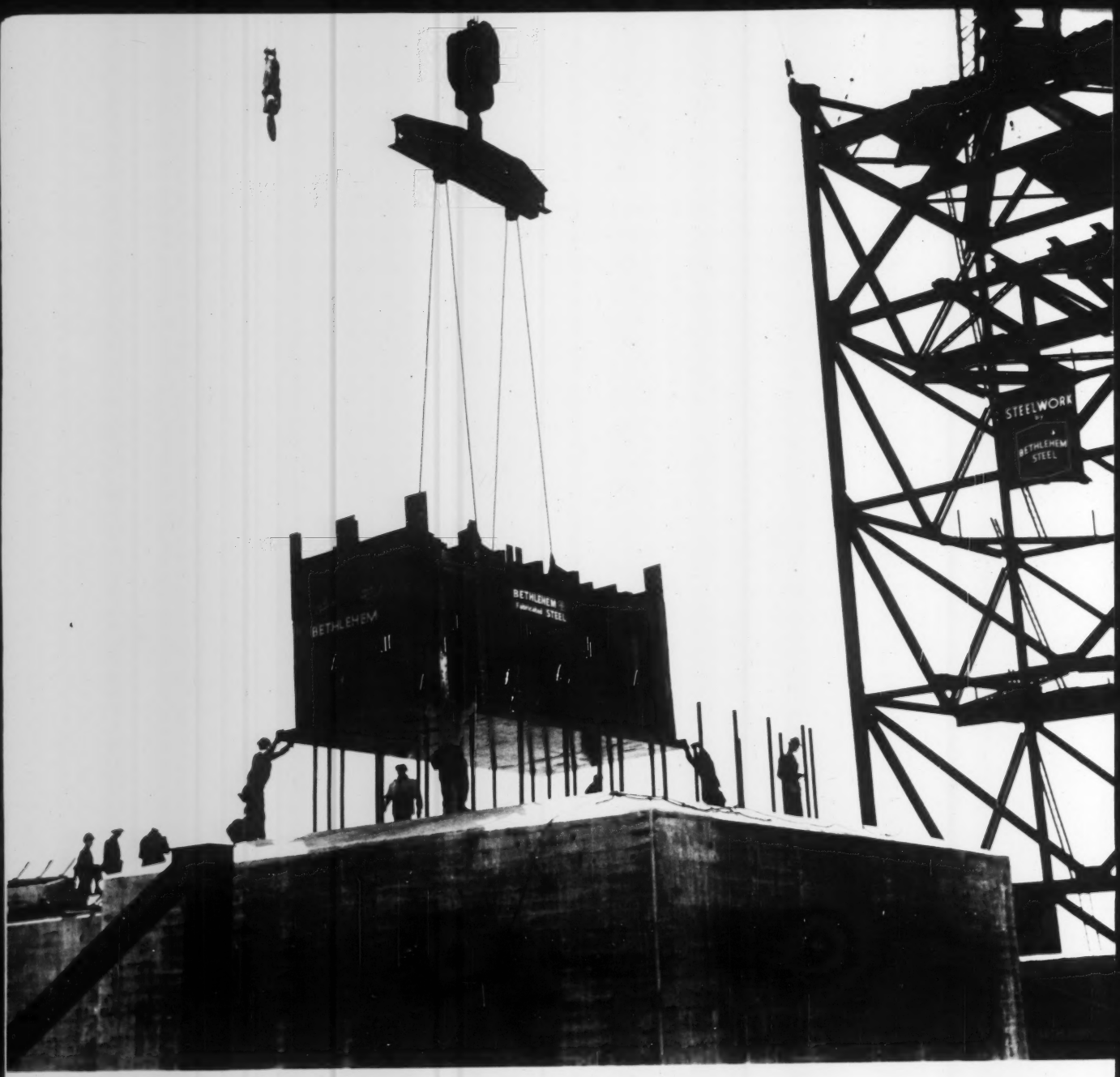
For all credits, please see last page

They Saved the Biggest for Last

YORK HAVEN, PA.—Usually the heaviest steel members are placed near the base of a structure. Not so here. Two hefty plate girders, far and away the largest pieces in the job, had to be placed at the very top of the 170-ft high boiler support structure of this big steam-electric generating plant. The girder you see here, tipped the scales at 66 tons. The other, only 58 tons, was still a sizeable lift.

The project is Pennsylvania Power & Light Company's Brunner Island plant, on the Susquehanna River. Its cross-compound turbine generator, twice as big as any other on the PP&L system, will have an effective capacity of 300,000 kilowatts. Bethlehem fabricated nearly 5,000 tons of steel for the various structures required at the station. Our erection crews used high strength bolts for field connections.

The Brunner Island plant will be of the outdoor type. All major equipment, including the turbine generator, is left out in the open. This means substantial construction economies with no loss in operating efficiency. PP&L's Martins Creek plant, for which Bethlehem supplied the steelwork in 1954, was the first of this type to be constructed in a northern climate. It has proven a complete success.



Easy Does It

NEW YORK CITY—Keen eyes and skilled hands guide this tricky operation, placing a 7[illegible]-ton suspension bridge tower section onto its pier. The place is the upper East River, where Bethlehem bridgemen are erecting the towers for the Throgs Neck Bridge, a project of the Triborough Bridge and Tunnel Authority.

Hoisted from a barge by a giant tower derrick, 100 ft high, the section was carefully positioned and lowered onto fourteen anchor bolts, each 5 in. in diameter, and extending 5[illegible] ft from the concrete pier. The operation was then repeated, each tower requiring four such sections, two for each leg.

When the bridge is completed, the load on each tower at its base will be 80 million pounds. The towers will rise 556 ft above the piers, which in turn have an elevation of 28[illegible] ft.

The main span will be 1,800 ft. In general the design is similar to that of Philadelphia's Walt Whitman Bridge, completed by Bethlehem in 1957.

BETHLEHEM STEEL

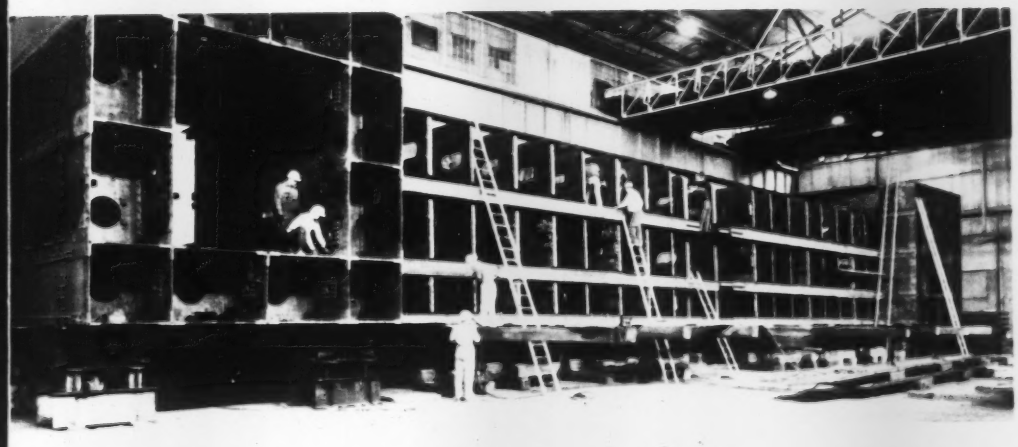
Here's an Unusual Building Addition

WILMINGTON, DEL.—Sturdy as its name implies, the Hercules Tower rises above the wings of the Delaware Trust Building that nearly surround it. Now topped out, the tower stands twenty-two stories plus penthouse, and is by far the tallest building in the city.

Its erection was unique, involving problems rarely encountered in multi-story construction. First was the difficulty of maneuvering all of the steel through a 14-ft alley, the sole means of access to the job. Second came the problem of placing giant plate girders just 2″ in above the roof of a one-story building that remained in full operation while the tower was erected above it. Finally, the entire tower had to be erected *without so much as* breaking a window in the Trust Building only scant feet away, and with minimum disturbance to office workers.

Despite these demanding requirements, Bethlehem erection crews accomplished the job, and fast. They used high-strength bolts, a Bethlehem product that has become virtually standard for field erection.

Unlike the Atlanta telephone company addition described in these pages, the Hercules Tower is not tied in structurally with the original building, although access is provided between the two at every floor level.



Pre-assembly of tower portal at the Pottstown Fabricating Works.

BETHLEHEM STEEL

Iowa-side bridge approach.

An addition—and then some

LOS ANGELES—When The Standard Federal Savings and Loan Association headquarters was built in 1958 it was one of the city's first post-war, thoroughly modern commercial buildings. Its steel framework was completed by Bethlehem Pacific crews in the speedy time of only 29 working days.

Now the fast growing Association requires greatly increased office space. So Bethlehem Pacific was called upon to put up this 15-story addition, again in record time. It's 195 ft high, and provides 128,000 sq ft of floor space.

While the two buildings will be fully integrated, they are designed to move independently in the event of seismic disturbances. The slight gap provided between the structures is bridged by standard expansion joints in the connecting floors, walls, and ceilings.

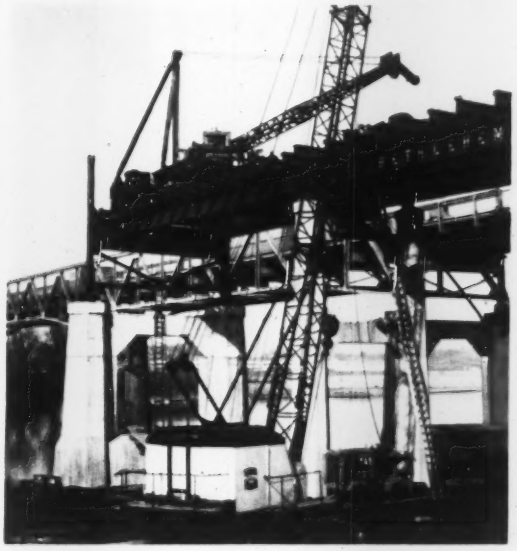
They're Bridging the Mississippi Again

BETTENDORF, IOWA—Bethlehem bridgemen put the finishing touches to the Iowa-side approach steel for the new Iowa-Illinois Memorial Bridge over the Mississippi River between this city and Moline. It's a most unusual job in that the new bridge will be virtually identical to the existing bridge, constructed in 1935 by McClintic-Marshall Corporation, then a Bethlehem subsidiary. The two bridges will be only 73 ft apart, center-to-center, as is apparent in the photos at left and below.

The new bridge will extend 5,017 ft, of which 3,370 ft is over water. Its most spectacular portion is the suspension bridge. Its towers will rise 160 ft above water level, with a main span of 740 ft, and side spans of 370 ft each. Bethlehem is handling all phases of erection including supplying and spinning the suspension cables.

The approaches on the shorter Iowa side comprise fifteen continuous beam spans, totaling about 900 ft. Starting from the Illinois side of the river, there are eleven continuous beam spans for 747 ft, then six through-truss spans and a single deck-truss span for a total length of 1,498 ft.

The Davenport Bridge Commission plans to change traffic flow, upon completion of the new bridge, to one-way traffic on each. This arrangement will be flexible, and can be revised to meet the requirements of fluctuating traffic conditions.



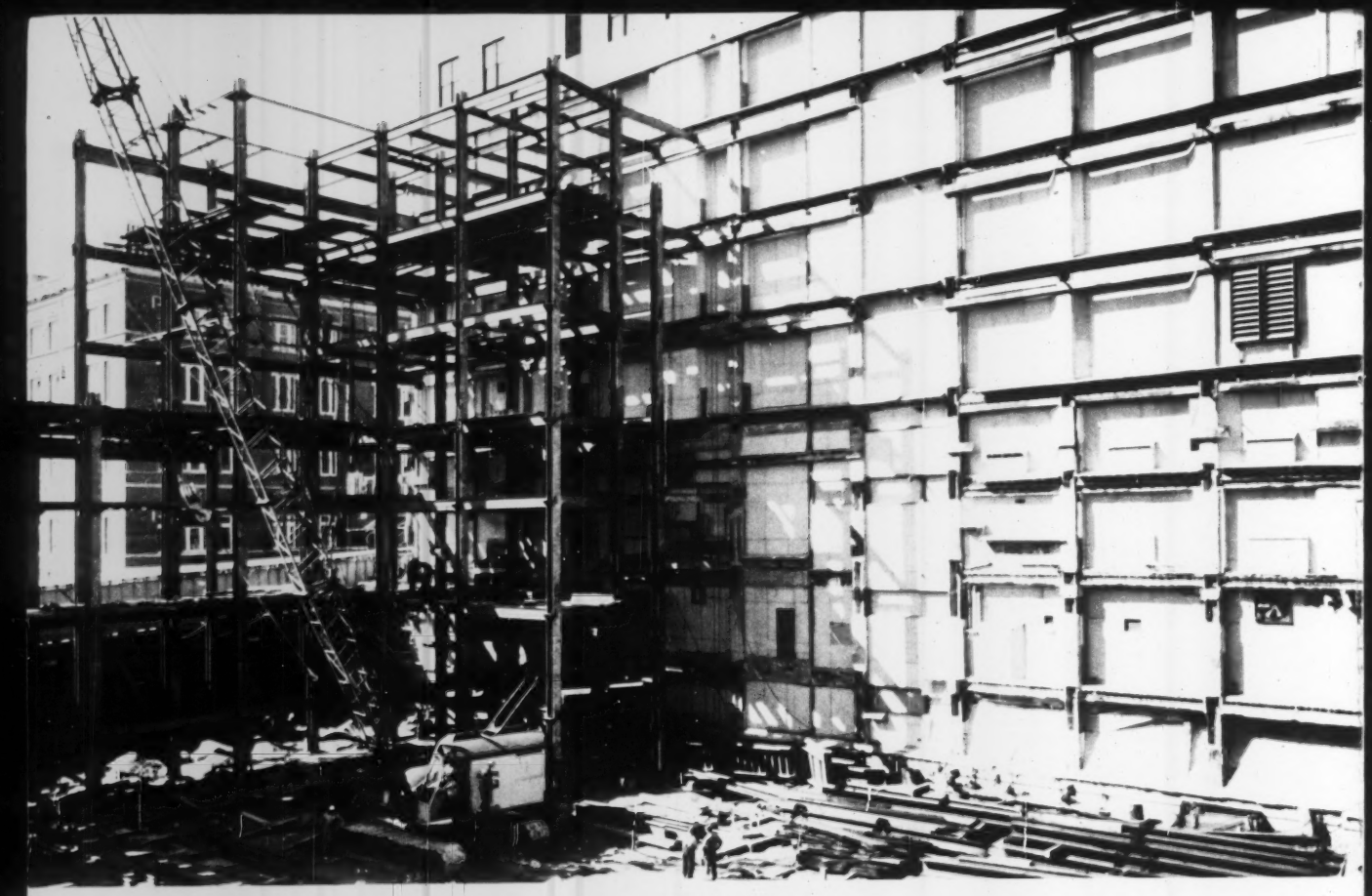
Illinois-side approach.

LA's First 'Scraper

LOS ANGELES—This is the topped-out framework for the California Bank at Sixth and Spring streets, the first downtown commercial building to exceed the former height limit. It's 267 ft high, well above the previous restriction of 150 ft.

Actually there are sixteen floors to be used for commercial purposes, the seventeenth and eighteenth floors housing building services. There are four underground levels, providing parking space for some 245 cars.

Bethlehem Pacific handled fabrication and erection, using high-strength bolts for field connections.



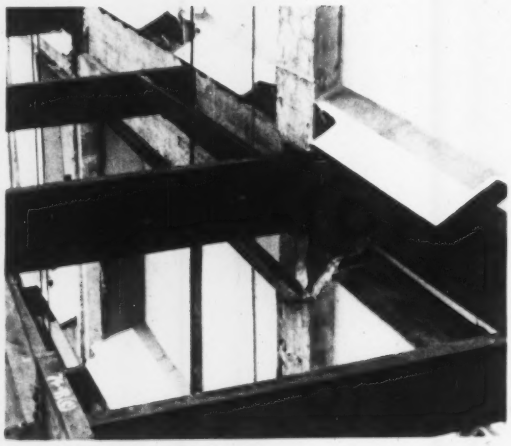
Steel Buildings Can Grow—and Grow!

ATLANTA—If you want evidence of the expandability of a steel framed building, here it is. Back in 1929, Southern Bell Telephone and Telegraph Company constructed a six-story, steel framed, limestone-faced equipment building at 51 Ivy Street. By 1946 the city's need for telephone service had grown to the extent that the company added eight stories to provide more space, bringing the height of the building to fourteen stories. Bethlehem Steel crews handled the addition so as not to interfere with normal operation of the lower floors.

Again this year the building is growing, this time horizontally, and once again Bethlehem is on the job. To the rear of the main building they're adding a 126 by 111 ft structure, four floors and mezzanine, with two basements. Furthermore, this framing is designed to be extended to fourteen stories when future requirements demand it.

In the words of Southern Bell, "Atlanta's importance as a communications hub of the South—one of the largest long distance switching centers in the world and one of the three major TV control centers—will be further increased when the project is completed."

As can be seen in the photograph, the existing brick walls were removed and temporary dust-proof, fire-proof, and moisture-proof partitions were installed. The steel columns were exposed and clips and seats bolted or welded to them. As new beams are bolted to these connections, the two buildings become tied in structurally.



Detail of connections to existing framing.

The addition, totaling about 1,550 tons, is being erected with high-strength structural bolts for speed, quietness, safety, and economy. As can be seen, holes were drilled in the tops of the columns to facilitate construction of the future upper floors.

BETHLEHEM STEEL

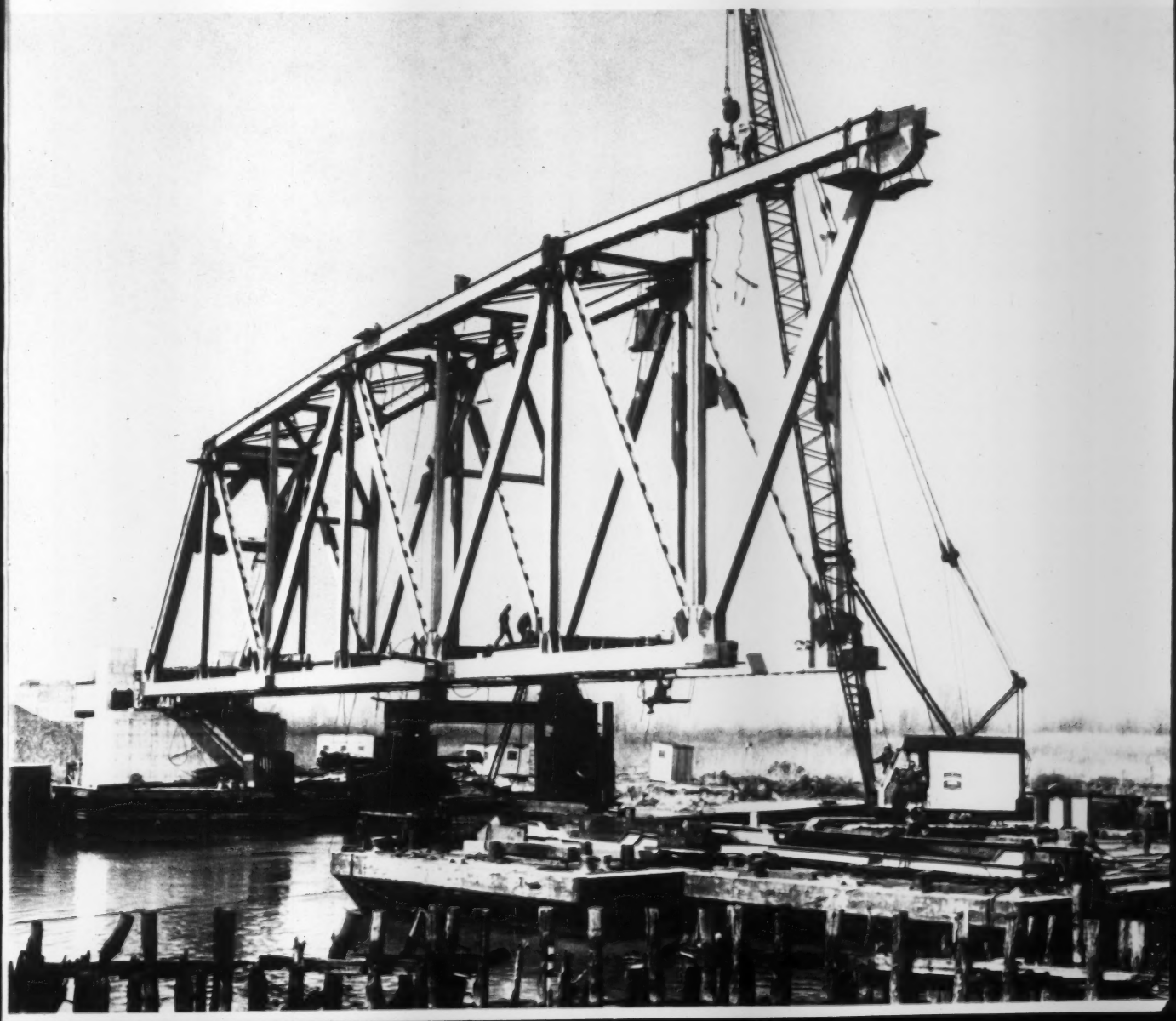
BETHLEHEM STEEL

Channel Crossing

CALUMET CITY, ILL.—Here's a bridge that required considerable ingenuity in its erection scheme. The primary problems facing Bethlehem erection crews were the through-truss design of the main bridge, which limited the type of equipment that could be used, and the necessity of keeping the main channel of the Little Calumet River open for navigation.

The single-track railroad bridge, comprising two 67-ft deck-plate girder approaches and a 310-ft Warren truss main span, is being built for the Michigan Central Railroad of the New York Central System. It replaces a nearby swing bridge, and is designed for conversion to a vertical-lift bridge when other river improvements permit the passage of large vessels. The new construction is part of the Chicago District Corps of Engineers' Calumet-Sag Navigation Project.

First, Bethlehem bridgemen erected the west-side girder approach. Meanwhile, they mounted a 50-ton-capacity crawler crane on a barge tied to another barge on which they erected two falsework bents. The first four panels of the truss were assembled on the bents, then floated into place so as to rest on the west abutment and a falsework bent placed in the river 124 ft from shore. From this falsework they cantilevered two more panels out across the navigation channel, using the floating crawler. To avoid obstructing navigation any longer than necessary, they didn't install the second falsework bent until that cantilever was complete. Then, with the falsework in place, they cantilevered the final four panels the remaining 124 ft to the east abutment.



CREDITS . . .

Brunner Island Steam Electric Station

Owner: Pennsylvania Power & Light Company; *consulting engineers:* Ebasco Services, Inc.; *contractor for boiler and boiler supporting structure:* Combustion Engineering Inc.

Michigan Central Railroad Bridge

Owner: New York Central Railroad Company; *consulting engineers:* Howard Needles Tammen & Bergendoff

Hercules Tower

Owner: Shapdale Inc.; *architect:* W. Ellis Preston; *structural engineers:* Severud-Elstad-Krueger Associates; *general contractor:* Wark & Company

Telephone Building Addition

Owner: Southern Bell Telephone and Telegraph Company; *architects and engineers:* Suggs, Williamson, Vaught and Spiker; *general contractor:* Barge-Thompson, Inc.

Iowa-Illinois Memorial Bridge

Owner: Davenport Bridge Commission; *design engineers:* Modjeski & Masters (Modjeski, Masters & Case, Inc., designed the existing bridge)

Throgs Neck Bridge

Owner: Triborough Bridge and Tunnel Authority; *consulting engineers for main bridge:* Ammann & Whitney; *consulting engineers for approach viaducts:* F. Lionel Pavlo; *consulting architects:* Aymar Embury II, A. Gordon Lorimer, John B. Peterkin, Theodore J. Young

California Bank

Architect and engineer: Claud Beelman & Associates; *consulting structural engineers:* Brandow & Johnston; *general contractor:* C. L. Peck Construction & Realty Company; *interior floor design:* Henry Dreyfuss

Standard Federal Savings & Loan Association Building

Architect: Welton Becket and Associates; *structural engineer:* Donald Douglas; *general contractor:* C. L. Peck Construction & Realty Company

LITERATURE AVAILABLE—FREE OF CHARGE

Booklet 482—Building The Greater New Orleans Bridge. Describes construction of the superstructure for the nation's longest cantilever bridge.

Booklet 454—Building the Walt Whitman Bridge. The picture story of construction of a major suspension bridge over the Delaware River.

Booklet 495—High Strength Bolting for Structural Joints. A brand-new revision of our 24-page booklet describing and illustrating the use of high-strength bolts for structural applications.

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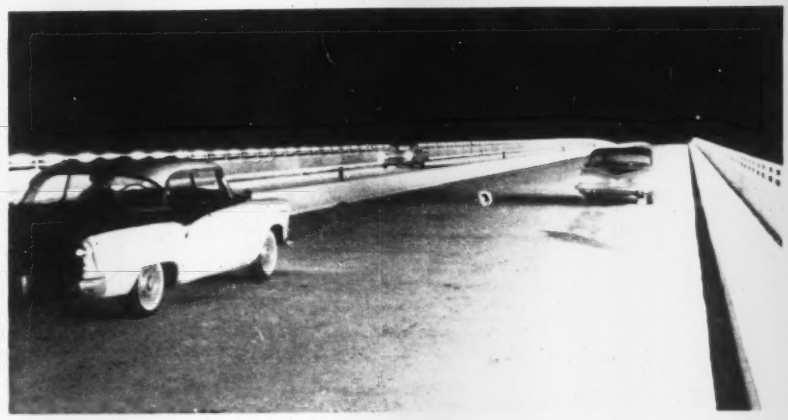

Clean lines and easy maintenance are achieved through . . .

Down-to-Earth Bridge Lighting

Twin, waist-high ribbons of light will guide motorists over the $12-million Manahawkin Causeway Bridge in southeastern New Jersey.

Fluorescent luminaires mounted in the bridge's aluminum railings, only 30 in. above the roadway surface, will provide uniform illumination of the roadway and, we believe, the best visibility under all weather conditions, including rain, fog, sleet and snow.

The Manahawkin Bridge, 2,400 ft long, spans the inter-coastal waterway in New Jersey. It is the only highway link between the mainland and Long Beach Island.

The bridge has two 28-ft roadways separated by a 2-ft high center divider. A 3½-ft sidewalk is built on each side of the bridge. Each roadway is wide enough to accommodate two lines of traffic in the event of a breakdown.

Installed in the bridge's top rail are 384 specially designed, 42-in. fluorescent luminaires using "slim-line F42T6/CW" lamps. Two luminaires spaced about 2 ft apart are mounted in each 12½-ft section of the elliptically shaped rail.

The lights were designed by General Electric Co. to illuminate each roadway evenly and to leave the curb in shadow.

Installation of the system was spearheaded by State Highway Commissioner Dwight R. Palmer, who envisioned low-level lighting for bridges some 20 years ago. Tests were started in 1954 to determine the practicability of low mounting-height lighting systems. From our observations we believe that:

- **The system provides efficient use of the light. All of it is directed to the roadway.**
- **The entire roadway is evenly illuminated** and its limits are clearly defined, particularly the center divider that runs the length of the bridge.
- **The system is relatively free from** glare, because of the low brightness of fluorescent luminaires when installed parallel rather than at right angles to the roadway.
- **The bridge rail lighting system looks better** in daylight than a conventional overhead system would look.
- **The luminaires can be serviced conveniently** and economically from the sidewalks. These operations can be conducted without the interference or reduction in traffic that occurs when a truck is used to service overhead lights.

An elaborate control system has been used. The bridge is divided electrically into four quadrants. Three-phase, four-wire 208/120-volt power is supplied from both ends of the bridge. Each phase is subdivided into three circuits, resulting in nine circuits for each quadrant, or a total of 36 circuits for the entire bridge. With such a distribution system the loss of circuit or even an entire phase will still produce a uniform pattern of illumination.

Manahawkin Bridge lighting installation has led the New Jersey State Highway Department to consider this type of lighting for all future large bridge construction as well as for other applications. Additional experiments and observations will be made under varied traffic and weather conditions to improve further this lighting technique.

Author D. J. Henderson, supervising electrical engineer of the New Jersey State Highway Department, heads the bureau that wrote the specification for the bridge installation.

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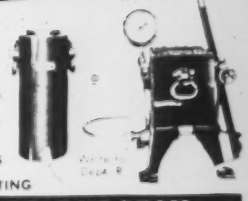

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The VE pull-type vibratory compactor is said to achieve deeper compaction by directing its 12 tons of impact vertically only.

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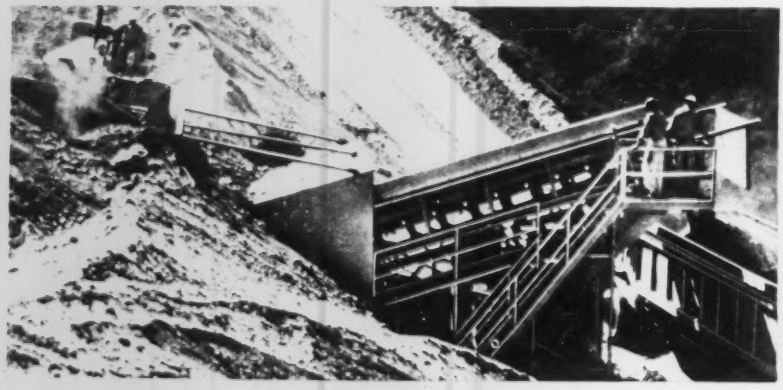
The VE comes in two models. The 72 has a 6-ft-wide impact area; the 84, 7 ft.

The 5,000- and 6,000-lb units are pulled by a light rubber-tired tractor. The VE-72 is 8 ft long, 83 in. wide and 66 in. high; roll diameter is 31½ in.

Power is supplied by a Hercules 2-cylinder, 35-hp, air-cooled gasoline engine. Diesel engine or hydraulic motor is optional. Seaman-Gunnison Corp., 2763 S. 27th St., Milwaukee 15, Wis.



Conveyor belt loader . . .

Moves Dirt at High Rate

The 60-in. "Pitloader" can load up to 1 cu yd of dirt per sec. The conveyor loader can also pour gravel, rock and sand into trucks.

The manufacturer is also producing smaller models with 36-in. and 42-in. conveyor belts. These are mounted on rubber tires for quick moves.

The 60-in. rig is of such heavy construction that it can be skidded, without dismantling, for short work area changes, the maker states.

One man can operate the Pitloader. Feeder plates are hydraulically adjusted on the bigger models.

Conveyers have anti-buildup rolls and a double drive transmits equal power to both sides of the head roll. Kolhring California Co., Stockton, Calif.

Pneumatic Delivery Unit Places Cement in Silos

A bulk pneumatic trailer capable of delivering cement directly into a silo is available. The unit can carry cement through pipes as high as 100 ft and as far away as 150 ft.

Its delivery rate is 800 lb to 1,000 lb per minute, depending on the distance. It can be operated with ordinary compressed air. Albert Air Conveyor Corp., 50 Drumm St., San Francisco 11, Calif.

Portable Crushing Unit Has Overhead Jaw Crusher

The first of a new series of portable primary crushing units is being produced by Pioneer Engineering. Known as the 151PR, the unit has a 20-36 overhead eccentric jaw crusher and a 3x8-ft apron type feeder that is chain driven from the crusher.

The jaw crusher, built with a 20 in. opening, has a hydraulic-shim adjustment for crusher setting through a range of 2½ in. or 3 in. up to 6 in.. The hopper sides are sloped and braced to the bottom of the feeder mounting sills. Pioneer Engineering, Division of Poor & Co., Minneapolis 14, Minn.

New Power Transmission Built Into Tandem Roller

A redesigned version of the Galion three-ton-to-five-ton tandem roller is equipped with Roll-O-Matic drive. This drive is a combination of torque converter, automatic fluid transmission and tail shaft governor. Shock loads are cushioned and stalling is eliminated.

Rolling speeds from 0.5 mph to 5.6 mph are provided by two-range transmission. The unit is also equipped with a variable speed steering adjustment. Galion Iron Works & Manufacturing Co., Galion, Ohio.

Hot Asphalt Trailer Tank Built With Double Walls

A double-wall hot asphalt tank trailer permits transportation of the material in extremes of weather. The trailer's sleeve-type outer wall is designed to coincide with the expansion and contraction of the inner wall.

The tank is tapered to speed the flow of materials. Its drain valve can be operated manually. Custom Head Co., Springfield, Mo.

Dynamite under control. To protect buildings from blast damage, Liberty developed an instrument that tells how much dynamite can be used safely in a particular locale. The "accelerograph" has helped contractors cut insurance costs on such jobs as the New York Thruway and the Connecticut Turnpike.

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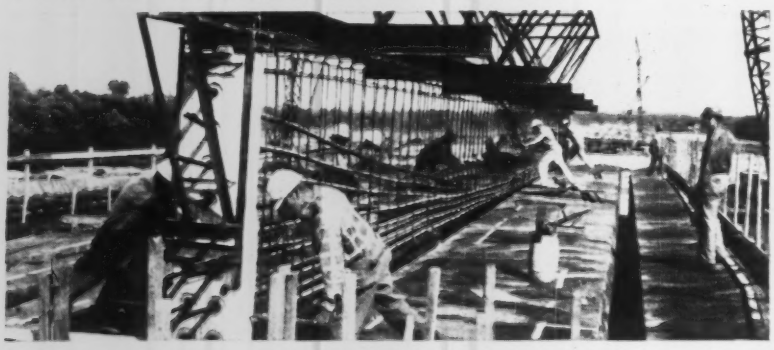
The McKiernan-Terry DE-20 Diesel Pile Hammer driving 90 foot long, light-wall, pipe pile on the New Hampshire Turnpike Extension. Completely self contained, the hammer needs neither boiler or air compressor nor hydraulic or electrical connections. Master engineered for higher productivity, precision manufactured for matchless durability—accept less and the ultimate cost will be more! McKiernan-Terry Corporation, Pile Hammer Division, 30 Richards Avenue, Dover, N. J.

CUT PRODUCTION TIME AND COST ON POST-TENSIONED JOBS!

The Wolcott Avenue Bridge in Connecticut illustrates how a contractor's know-how, together with the use of Freyssinet post-tensioning methods, reduces production time and cost. Merritt-Chapman & Scott completed the 14 cast-in-place spans, each 120′ long, months ahead of schedule. *Intercontinental Equipment Co. supplied the post-tensioning stressing components.* Full details on the Wolcott Avenue job and our prestressing materials and equipment are available now. Your inquiry is invited.



INTERCONTINENTAL EQUIPMENT CO., INC.

Prestressed Concrete Division

120 Broadway, New York 5, N. Y.

ASSOCIATE MEMBER | PCI

Men and Jobs

W. V. Buck Appointed S. D. Highway Engineer

Walter Van Buck, Kansas City Regional Engineer for the Bureau of Public Roads until retiring this spring, has been appointed chief highway engineer of South Dakota. He succeeds H. C. Rempfer.

Mr. Buck spent nearly 40 years in state and federal highway engineering. From 1925 to 1934 he served as Kansas State Highway Engineer. He served with BPR for 25 years as design engineer in the Ohio District, principal highway engineer in charge of design, Washington, D. C., and regional engineer at St. Paul and Kansas City, Mo.

He is credited with outstanding contributions of major significance to the advancement of highways on local, state and national levels.

Sanitary Engineer Gets City Purchasing Post

Ben Benas, superintendent of sewer repair and sewerage treatment for the City of San Francisco has been named to the $1,350 a month job of city purchaser. He succeeds a former newspaper man, Ben G. Kline, now retired. Mr. Benas has been an employee of the City's Department of Public Works since 1933. He has held the sewer superintendent's job since 1954.

He graduated from the University of California at Berkeley in 1921 with a civil engineering degree. He was a civil engineer designer for the City of Los Angeles before moving to San Francisco.

Mr. Benas served in the army in both World Wars. He became a lieutenant colonel in the Corps of Engineers.

(*Men and Jobs continued p. 62*)

For extra high strength wire rope...
use CF&I-Wickwire *Double Gray*

The CF&I Image reflects CF&I's experience as a producer of many steel products and CF&I's versatility in developing new products to meet exacting requirements . . . like Wickwire Double Gray*.

The special steel used in Double Gray provides extra resistance to the deforming effects of peening and crushing which occur on the drums and sheaves of heavy equipment. Double Gray also gives extra resistance to abrasion.

Because of these superior qualities, Double Gray rope quickly repays its slightly higher initial cost in safer, more economical operations. Use it wherever extra high strength wire rope is required.

For a free copy of our Double Gray booklet, write to: Advertising Department, The Colorado Fuel and Iron Corporation, 575 Madison Avenue, New York 22, N. Y.

**Wickwire Double Gray Wire Rope is made of extra-improved plow steel. Fortified by an independent wire rope core of the same extra-high strength steel, Double Gray rope has a 15% higher breaking strength than the catalog breaking strength of an improved plow steel rope with IWRC.*

6632

WICKWIRE ROPE

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In the West, **THE COLORADO FUEL AND IRON CORPORATION** — Albuquerque · Amarillo · Billings · Boise · Butte · Denver · El Paso · Farmington, N.M. · Fort Worth · Houston · Kansas City · Lincoln · Los Angeles · Oakland · Odessa, Tex. · Oklahoma City · Phoenix · Portland · Pueblo · Salt Lake City · San Francisco · San Leandro · Seattle · Spokane · Tulsa · Wichita

In the East, **WICKWIRE SPENCER STEEL DIVISION** — Boston · Buffalo · Chattanooga · Chicago · Detroit · Emlenton (Pa.) · New Orleans · New York · Philadelphia

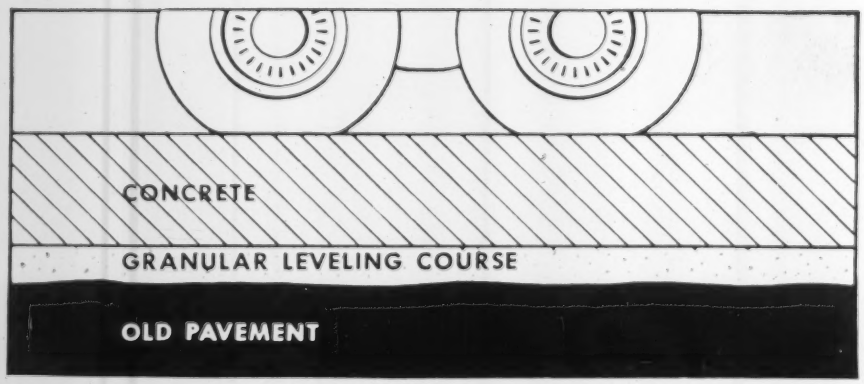
CF&I STEEL

FOR RUNWAYS WITH
A SOLID FUTURE...

Concrete

Runways at Chicago's O'Hare Field now converted to jet use by an overlay

With concrete, the strength is in the concrete itself. It is not just a smoothing overlay. Loads can be computed *mathematically*. With the bearing values of the soil plus the old pavement at O'Hare, 11 inches of concrete did the job—a big savings. Because the flexible pavement had become channelized and rutted, a 3-inch granular leveling course was used to insure uniform concrete thickness.



# of CONCRETE

Resurfacing with concrete turns old runways into new . . . brings them up to jet-age needs

At Chicago-O'Hare International Airport, they simply covered the flexible pavement with modern concrete. With the old pavement serving as a subbase, 11 inches of concrete gives the necessary strength to handle the heaviest jet wheel loads expected.

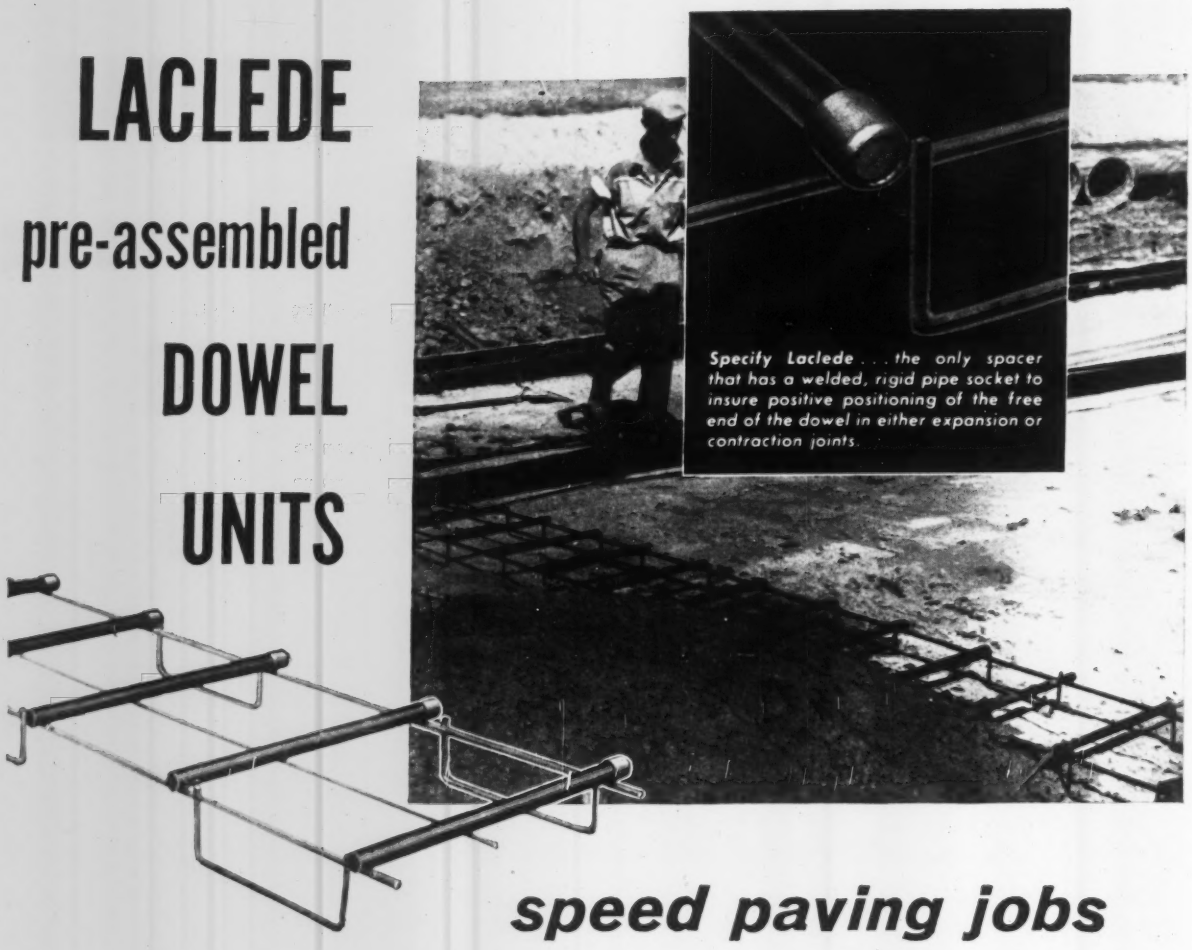
The *beam* strength of concrete makes such overlays possible. Concrete is the only paving material that can be precisely designed to match *future* loads. That's why concrete runways can be expected to last 50 years and longer. There won't be any waviness or channelization, even under 150-ton jet airliner weights. And concrete withstands the heat of jet blasts, and the action of spilled fuel, as no other pavement can.

Concrete is the high-safety pavement—pilots themselves will tell you this. It is light-colored for maximum visibility. Its grainy surface means dependable skid resistance and better braking. Concrete creates no dragging action on take-offs.

These material and engineering advantages that make modern concrete ideal for airports make it unexcelled too, for highways of every class. Mile after mile of concrete across the country proves it can do the job better—and do it for less money in the long run!

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*

LACLEDE pre-assembled DOWEL UNITS


Specify Laclede . . . the only spacer that has a welded, rigid pipe socket to insure positive positioning of the free end of the dowel in either expansion or contraction joints.

speed paving jobs

Expansion sleeves, chairs and spacer bars are all precision shop welded . . . by Laclede . . . into a complete dowel assembly for expansion, contraction and construction joints.

Delivered to the job site in a single, easy-to-handle unit that maintains rigid alignment, Laclede's new dowel assemblies speed paving jobs by cutting installation labor costs. Additional time and money can be saved by specifying Laclede dowel assemblies with dowels shop coated—ready for immediate installation.

LACLEDE HIGHWAY STEELS

- *prefabricated dowel units*
- *multi-rib round reinforcing bars*
- *center joints*
- *tie bars*
- *7-wire strand for prestressing*
- *welded wire fabric*
- *recess joints*
- *accessories*

LACLEDE®

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ *Producers of Steel for Industry and Construction*

Construction Executive on Peace River Power Group

Wallace B. Haughan, President of John Laing & Son (Canada) Ltd., is a new director of the Peace River Power Development Co., Ltd.

This group was organized to make a study of the proposed Wenner-Gren hydro-electric development on the Peace River.

Mr. Haughan will represent on the PRPD board his own parent company, John Laing & Son (Holdings) Ltd. and Taylor Woodrow (Overseas) Ltd. Each of the British firms holds 250,000 shares in the development group.

Careers

Public Works

Walter Johnson, Kansas state highway engineer, has been elected president of the Mississippi Valley Conference of State Highway Departments. He succeeds **D. H. Bray**, Kentucky state highway engineer.

Bruce Weaver has been appointed Trumbull County engineer at Warren, Ohio to succeed the late Carl W. Ziegler. Mr. Weaver operated a consulting engineering firm in Warren.

William A. Miller of the General Services Administration has been named supervisory construction engineer with responsibility for supervising the construction of all new Federal Office buildings throughout the United States. As such, he will continue to serve in Washington as an assistant to the Commissioner of the Public Buildings Service in GSA's central office. He was a regional commissioner.

Lawrence L. Whiteneck has been named administrative engineer in the Los Angeles Harbor Department. He was senior harbor engineer for the Long Beach Harbor Department for ten years.

Col. Charles S. Skillman has been named commander of the U. S. Army Engineer Maintenance Center at Columbus.

Education

James C. Lamb, III, sanitary engineer with American Cyanamid Co. in Bound Brook, N. J., has been named associate professor of sanitary engineering in the sanitary engineering department of the School of Public Health, University of North Carolina.

William M. Wachter, dean of the College of Engineering at the University of Hawaii (ENR Apr. 16, p. 111), and **Wilfred J. Holmes**, vice-president and dean of administration, are switching posts. Holmes asked to be relieved of the more arduous vice-presidential and administration duties.

MASTER MECHANICS CORNER:

Bud Dawson
Rowe Construction Co.
Bloomington, Illinois

"We had lots of trouble with D8 transmission seals going out—finally discovered that cotton waste was breaking out of off-brand filters. No trouble now that Cat elements are used."

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.
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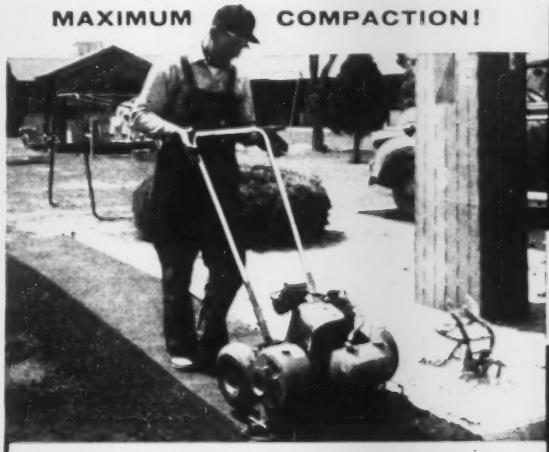

built to handle MORE JOBS!

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ECONOMICAL—Low initial cost, low operating cost. ORDER YOUR VIBRA-TAMP NOW. *Send for Catalog No. 630.*

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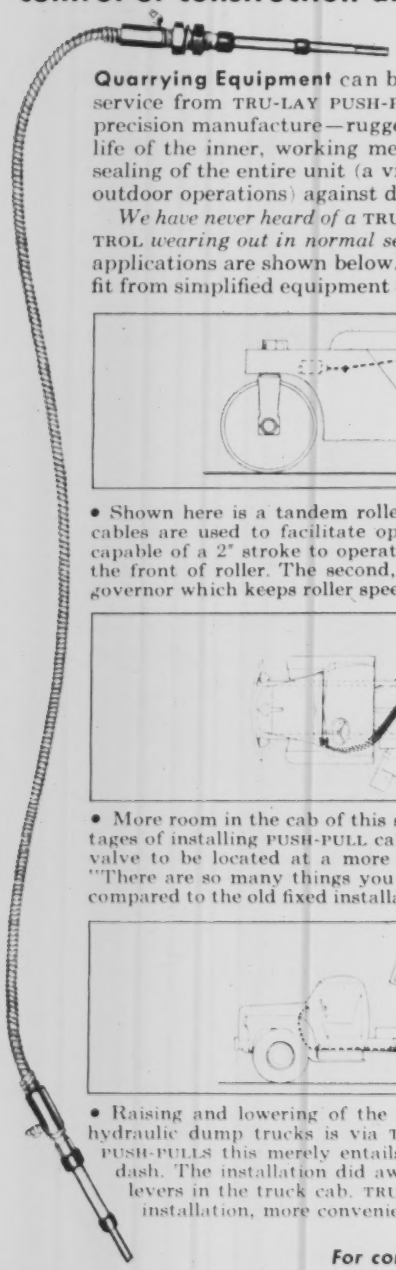
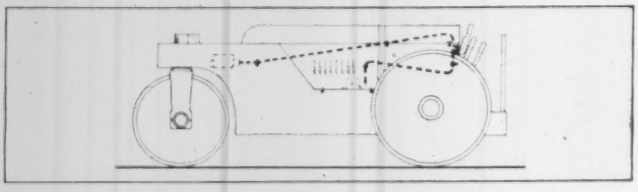
TRU-LAY *PUSH*-PULLS

give trouble-free, lifetime service for remote control of construction and quarrying equipment

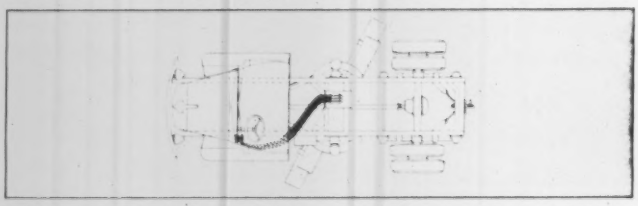


Operators of Construction or Quarrying Equipment can be certain of maintenance-free service from TRU-LAY PUSH-PULL CONTROLS because of their precision manufacture—rugged construction—lubrication for life of the inner, working member at the factory—complete sealing of the entire unit (a vitally important factor in tough, outdoor operations) against dust, dirt or moisture.

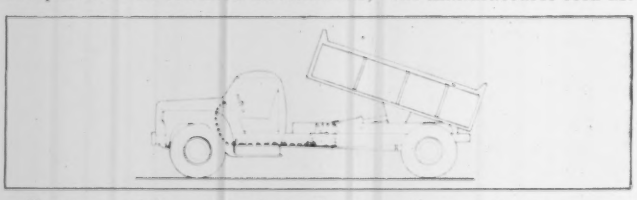
We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL *wearing out in normal service.* Examples of heavy-duty applications are shown below. Users of such equipment benefit from simplified equipment design and improved operation.



• Shown here is a tandem roller where two different PUSH-PULL cables are used to facilitate operation. One cable, 156" long, is capable of a 2" stroke to operate the hydraulic steering valve at the front of roller. The second, shorter cable operates tail shaft governor which keeps roller speed constant, upgrade or down.



• More room in the cab of this snow plow was one of the advantages of installing PUSH-PULL cables. This permitted the hydraulic valve to be located at a more convenient point in the chassis. "There are so many things you can do with these flexible cables compared to the old fixed installations," the manufacturer told us.



• Raising and lowering of the dump body on a famous line of hydraulic dump trucks is via TRU-LAY PUSH-PULL cables. With PUSH-PULLS this merely entails the pulling of a button on the dash. The installation did away with cut-up floor boards and levers in the truck cab. TRU-LAY PUSH-PULLS brought easier installation, more convenience and less maintenance.

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Obituaries

C. Gregg Shockley, chairman of the South Carolina Licensing Board of Contractors, in Columbia, S. C. He founded the G. C. Shockley Construction Co. in 1930. Before that he was associated with Johns-Manville Co.

James B. Koeppel, 43, vice president and construction superintendent of the Raulston Construction Co., Georgetown, Del.

T. Frederick Francis, 69, consulting engineer on the Trans-Canada Highway. A civil engineering graduate of McGill University in 1915, he supervised construction work for the Canadian Pacific Railroad and did highway work in northern Ontario.

Ford J. Twaits, 72, founder and partner of Twaits-Wittenberg Co., Los Angeles constructors-engineers. His company erected many buildings in downtown Los Angeles and, during World War II, at Fort Ord and Camp Roberts in California and Camp White, Ore. He was a founder of the Southern California chapter of Associated General Contractors and twice its president.

Evan H. Reisler, 67, retired civil engineer for the New York Central Railroad, in Buffalo, N. Y. He graduated from Lehigh University in 1921 and joined the New York Central staff the same year.

Clarence J. Glaser, 61, president of Glaser & Glaser Construction Co., Muncie, Ind.

Harry B. Fenton, 67, president of Fenton Construction Co. of Ashland, Ohio. He was one of the leading bituminous paving contractors in the Midwest. He was a member of the Ohio Contractor's Association.

James Laird deVou III, 85, retired civil engineer who supervised many of the important bridge erection jobs in the early part of the century, in Wilmington, Del. He graduated from Yale in 1893 and later studied at the University of Michigan. After a short time with the Pennsylvania Railroad in Pittsburgh, he joined the American Bridge Co. in 1903. He retired in 1938.

He was in charge of building the Huey P. Long Bridge over the Mississippi at New Orleans and of the rebuilding of the Bessemer and Lake Erie Railroad Bridge across the Allegheny near Pittsburgh. In the latter project he was engaged in moving a 1,140-ft span in 25 minutes.

USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

"It's A Gusher!"

Anyone who has seen them in action will tell you the same thing. The new Homelite "300" Pumps are really gushers. They handle 300 gallons per minute . . . 18,000 gallons per hour. They dewater trenches, ditches and other excavations in the fastest possible time. With their variable throttle, you get economical seepage control to keep excavations workable and your men on the job.

The new Homelite "300" Pumps not only work faster . . . they last longer. Standard equipment on all the "300" pumps is a new shaft seal that mates carbon seat against ceramic coated bronze ring. This new seal lasts up to 25 times longer under toughest working conditions.

Only 103 pounds, complete with built-in gasoline engine, the "300" pumps can be put to work anyplace fast. They self prime at 28 ft. above water level. They handle muddy water without clogging. And they start and work in any weather.

See them in action soon. See the quiet, slow-speed model for economical, high capacity pumping . . . or the standard-speed model for general jobs where higher discharge pressures are required . . . or the high-volume pressure pump model for jetting, pumping through long discharge hose or piping and other jobs requiring top discharge pressures. We'll gladly demonstrate any or all of these models at your request.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

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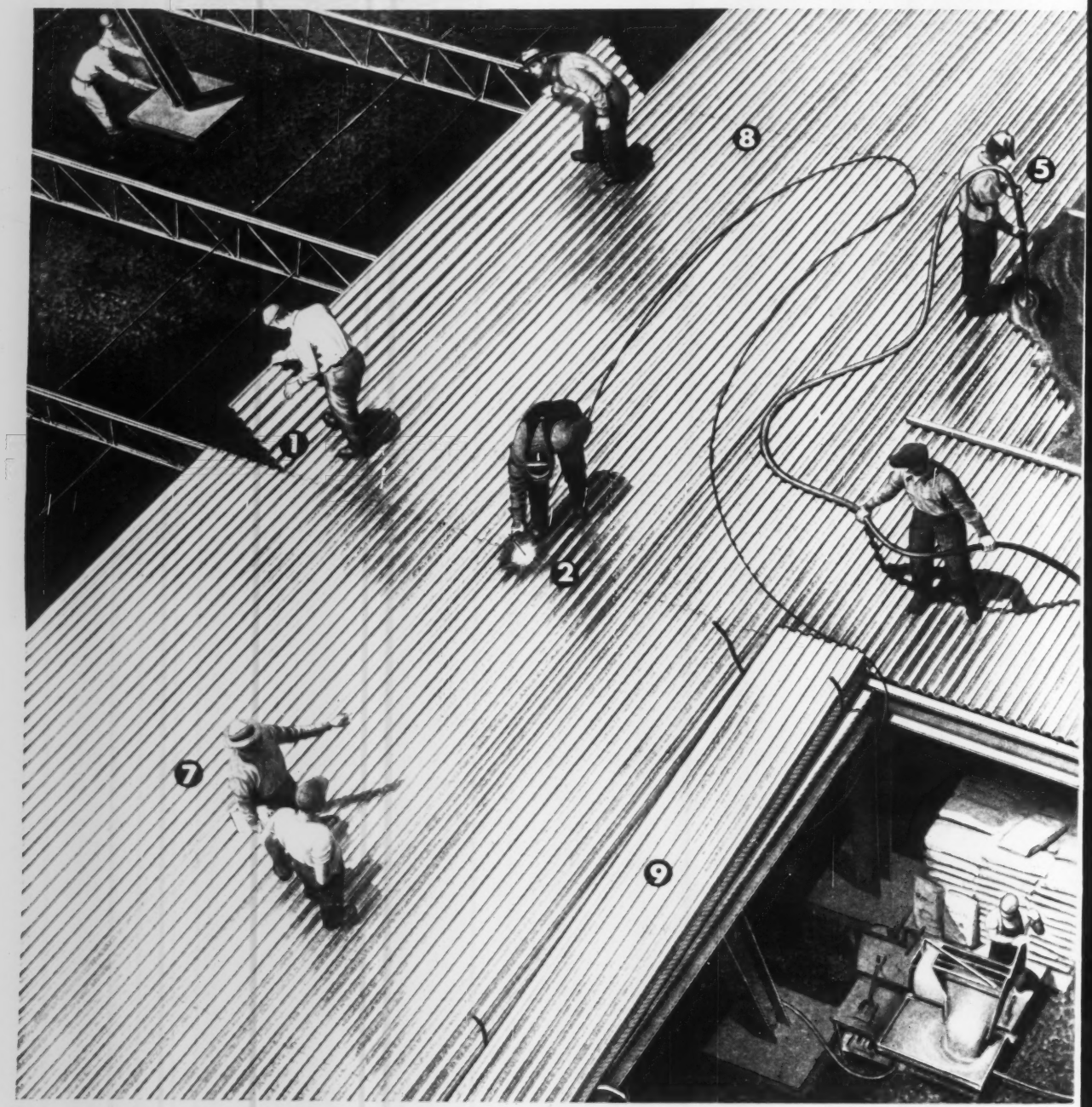
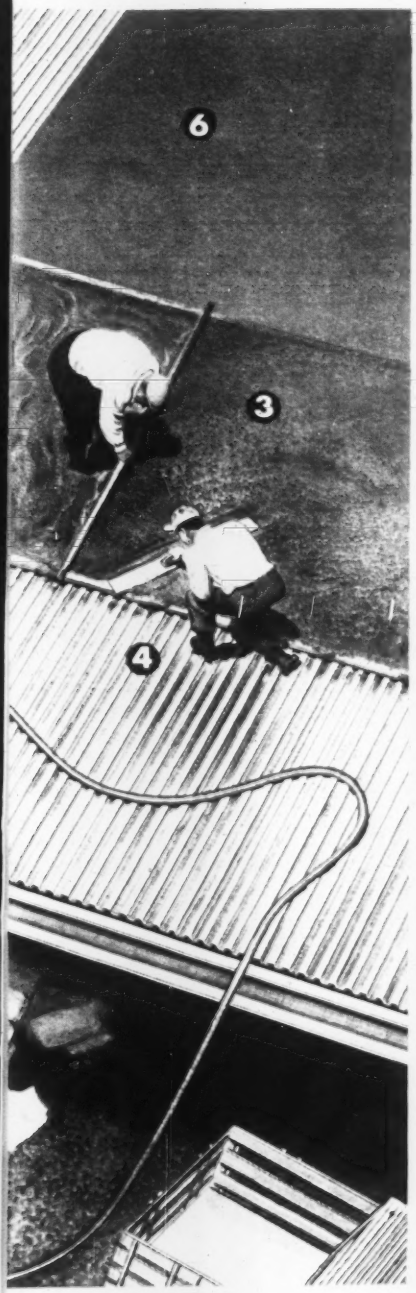
How a Tufcor® roof system



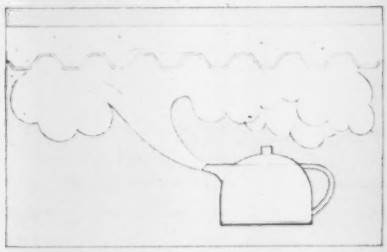
CHECK THESE TUFCOR FEATURES

1. **EASY TO INSTALL.** Rigid sheets fall quickly in place, arrive at job in convenient bundles.
2. **FAST PLUG WELDING.** Long 21'6" sheets cover up to 48 sq. ft., mean fewer laps and welds.
3. **GREATER STRENGTH.** Tufcor roof system provides safety factor of 5 to 10 times design load.
4. **SAFE WORKING PLATFORM.** Trades move in as soon as sheets are welded in place. No planking needed.
5. **FAST PLACING OF INSULATION.** As quickly as placing sheets! Less labor. Faster job completion.
6. **FIRM ROOF BASE.** Rigid system provides flat base for built-up roof, speeds roof application.

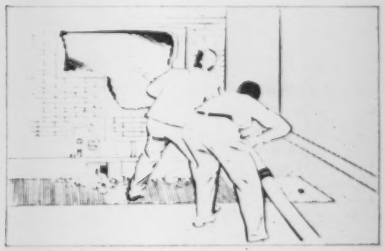
saves money in every stage of construction



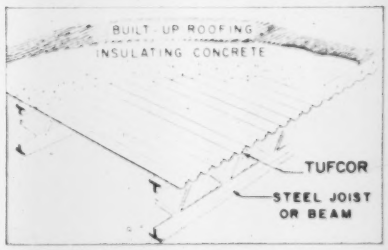
Check features. Compare with other systems. You'll see why Tufcor provides the lowest-cost roof assembly available. Construction is finished in three steps: (1) place Tufcor; (2) pour insulation; (3) apply built-up roof. Many qualified lightweight insulation applicators are now available to do an expert job. Consider, too, services you get from the producers of Tufcor. Granco pioneered in developing present-day floor and roof systems . . . maintains continuous research to keep its engineers, salesmen and distributors up-to-date on roof construction techniques. Like more information? Simply mail the coupon below.



VAPOR BARRIER. Tufcor prevents penetration of warm, moist air, keeps insulating concrete dry and effective. No wall vents or ceiling insulation needed. Heating and air conditioning costs are reduced.



FIRE-RESISTANT. No combustible materials in a Tufcor system! Exposed deck has a UL fire-resistant rating. Compare insurance savings over other systems. Tufcor saves on sprinkler heads, too.



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QUICK AVAILABILITY. More than 100 Granco stocking distributors, located from coast to coast, assure you of fast, dependable delivery and immediate, experienced field assistance.

7 **ONE APPLICATOR.** One firm places Tufcor *and* insulation. Fewer job phases to coordinate. Fewer delays.

8 **GALVANIZED SHEETS.** Permanent. No painting. Minimum maintenance. Underside *stays* attractive.

9 **FULL LINE.** Tufcor is available in 26, 24, 22, 20, and 18 gage to span any structural layout.

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Call specialists to dewater your job site. It's less expensive, far faster. John W.

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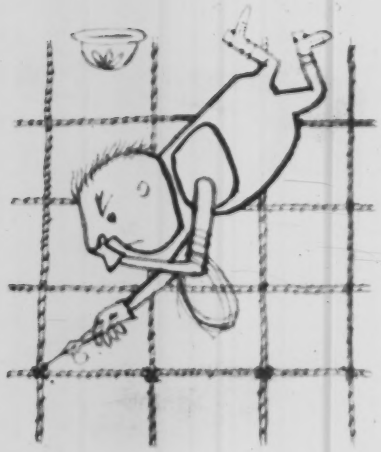


Unit Prices

Concrete Pipe Wins Iowa Airport Contract

Bituminous coated corrugated metal culvert pipe vs. a reinforced concrete culvert pipe alternate sharpened the bidding for this Charles City, Iowa, Municipal Airport grading and paving job. The city's $71,487 award to Willman Construction Co., Cedar Rapids, went to the reinforced concrete pipe. It is 2.5% below the engineer's estimate, 6.7% below the second bid, and more than 20% below the high of the six bids.

Henningson, Durham & Richardson, Inc., Omaha, is the consultant. Thomas A. Doyle is city engineer and inspector.

Contract covers grading and paving 2,600 lin ft of 60 ft runway, with connecting 635x30 ft paved taxiway.

A separate $6,001 lighting contract went to Bluhm Electric Co., Charles City, on a bid 6.6% under the engineer's estimate.

Minimum wages, excluding fringe benefits, include: cement mason $2.65; electrician $3.10; truck driver $1.25; common laborer $1.25.

The bidding on the two contracts included:

	Grading & Paving	Lighting
1C Willman Co., Cedar Rapids, Ia	$71 487	
1C Bluhm Electric Co., Charles City		$6 001
2 Highway Surfacers, New Hampton, Ia.	76 638	
6 Western Engineering, Harlan, Ia	89 833	
EE Henningson, Durham & Richardson, Inc., Omaha, and Thos. A. Doyle, City Engr., Charles City	73 303	6 423

Bids: 1-26-59 Items	Unit	Quantity	Unit Prices 1C	2
Grading and Paving				
Excavation, uncl	cy	35 130	$0 [illegible]	$0 50
Crushed aggregate base course	cy	4 798	1 25	1 85
Bit prime coat, MC-O	gal	6 248	0 20	0 20
surf course, aggregate	t	2 210	10 00	10 00
material	t	132 5	35 00	37 50
CMP, bit ctd, culv, 24"	lf	880	7 00	7 50
Alt RCP culv, 24"	lf	880	7 00	[illegible]
Lighting				
Stake-mtd elev marker lights, runway, clear	ea	1	89 71	
reloc existing	ea	15	28 20	
w salv insulating transf	ea	10	61 46	
threshold, green	ea	3	90 71	
reloc existing	ea	9	28 20	
taxiway, blue	ea	27	90 71	
Elev marker lights, remov existing & salv insul transf	ea	34	3 00	
Connection supply	ea	1	90 00	
Trench	lf	8 000	0 09	
Underground conduit, 2" steel	lf	65	1 13	
8 AGW, single strand, 600V				
cable in trench	lf	8,630	0 105	
cable in conduit	lf	65	0 105	

Commence: 5-1-59. Complete 60 working days
Liquidated damages: $50 working day

Kansas Sewage Treatment Plant Modified

A supplemental sewage treatment plant in Augusta, Kans., is designed to service a population of 10,000. The city's award at $210,904 to Asplund Construction Co., Enid, Okla., is 4.7% under the engineer's estimate and almost 17% below the high of seven bids. Ediger & Co., Wichita, is consulting engineer-architect.

Work includes an addition to the pump house, a primary settling basin, storm water pump station, control and valve houses, digester, control structures, modification of existing digester and sludge bed, piping and related items.

Prices seesawed between all the bidders for this sewage treatment plant contract, but a low bid of $85,691 for the control house, valve house and digester, and of $41,565 for the primary settling basin, gave Asplund an 11% advantage over his nearest competitor for the contract. High bids on these two items were $124,000 and $70,000, respectively. Asplund's $33,520 bid was high on pump house modifications, 25% above the $24,000 low bid for this item.

Class 3 concrete must contain a minimum of 5.5 sacks of cement per cu yd and attain a compressive strength of 3,000 psi at 28 days. Cast iron pipe is Class 150.

The contractor furnishes all materials. The railroad is at the site.

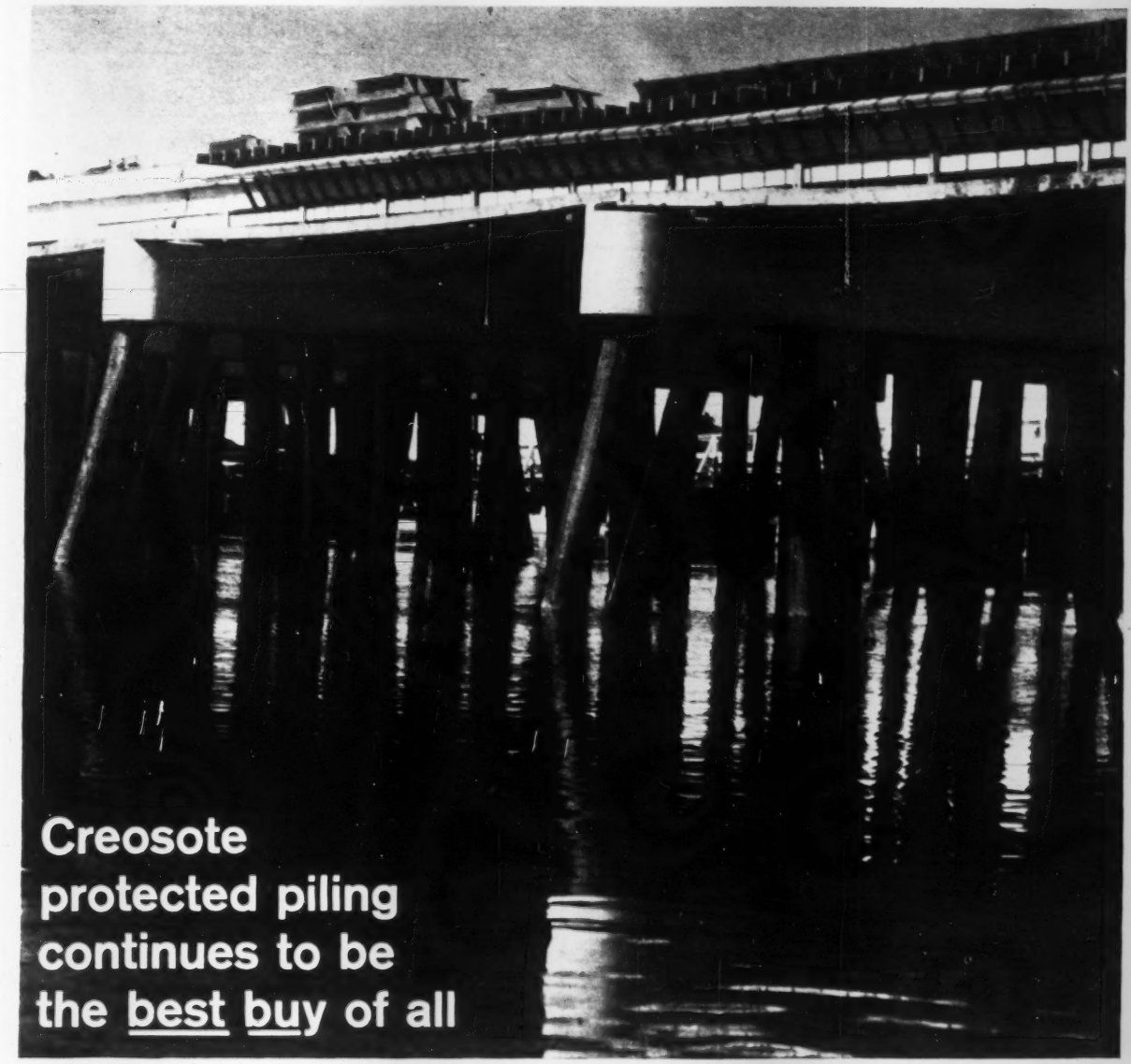
Prevailing wages range from a high of $3.25 for skilled, through $2.50 for semi-skilled, to $2.00 for common laborers.

The bidding included:

1C Asplund Construction Co., Enid, Okla	$210 904
2 Walters Constr. Co., Manhattan, Kans	238 376
7 Braymen & Meinking, Topeka, Kans	253 856
EE Ediger & Co., Wichita, Kans	221 488

Bids: 3-30-59 Items	Unit	Quantity	Unit Prices 1C	2
Pump house modification	ls	job	$33 520	$20 000
Control house, vlv house & digester	ls	job	85 691	87 500
Primary settling basin	ls	job	41 565	70 000
Storm water pumping station	ls	job	13 784	20 000
Digester modification	ls	job	3 800	2 000
Sludge bed modification	ls	job	2 691	1 000
Control structure -1	ls	job	1 200	750 00
-2	ls	job	892 00	1 500
Storm inlets	ls	job	1 702	1 500
Manhole, standard, 5 ϕ	ea	1	355 00	250 00
4 ϕ	ea	2	445 00	225 00
Concrete, cl 3	cy	5 7	60 00	60 00
Steel, reinforcing	lb	450	0 20	0 20
Cast iron pipe, 24"	lf	20	21 70	14 00
18"	lf	33	15 50	10 00
16"	lf	8	11 50	9 00
14"	lf	255	11 00	7 50
12"	lf	134	12 00	6 50
10"	lf	120	8 00	5 50
8"	lf	38	7 00	4 50
6"	lf	100	6 00	3 50
4"	lf	470	4 10	3 00
Steel pipe, 18"	lf	900	11 65	10 00
Soil pipe, 6"	lf	70	3 70	3 00
4"	lf	30	2 50	2 00
Vitrified clay pipe, 24"	lf	285	8 10	8 00
10"	lf	240	2 80	3 50
6"	lf	135	2 35	2 50

Commence: 60 days Completion schedule: 360 days
Liquidated damages: $50 day, for inspection only.
Add 12% to total for engineering & inspection.



Creosote protected piling continues to be the best buy of all

Nowadays with all the modern materials for bridge building, engineers are relying on the tried and tested support material—pressure creosoted piling—for bridges and similar structures. For example, the engineers of the modern Manahawkin Bay bridges in New Jersey specified pressure creosoted piling because of its dependable long-lived service.

Right now, with construction costs ever rising, road and bridge builders are doubly conscious of the long-run performance. Pressure creosoted timbers have remained strong and serviceable for 40 years and more! Whether it be bridges, culverts, poles or other road structures that require long-life protection, specify pressure creosoted lumber because of its:

MULTIPLE TOXICITY: Marine borers, fungi and wood destroying insects cannot develop immunity to the many toxic agents in creosote.

PENETRATION EASILY CHECKED: You can see the depth of penetration in any cross section.

THE ONLY TIME-PROVED PRESERVATIVE: Pressure creosoted wood has remained strong, without costly maintenance for generations.

PLASTICS AND COAL CHEMICALS DIVISION
40 Rector Street, New York 6, N. Y.

Allied Chemical

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, May 11; Next, June 11
- Wood Products, Glass, Explosives, Chemicals: Last, May 21; Next, June 18
- Clay Products, Lime, Plaster, Paint, Roofing: Last, May 28; Next, June 25
- Wage Rates, Building Board, Lath, Insulation: Last, May 28; Next, July 2

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl, C.L. lots cash, dis. not collected			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.,* truckload del.,* per block		CONCRETE Ready Mixed 1:2:4 del.
	Paper	Bulk	Mortar	Gravel, 1½ In.	Gravel, ¾ In.	Sand	1½ In.	¾ In.	1½ In.	¾ In.	Sand grav.	Lt. wgt. agg.	50 cy & over
Atlanta	$4.35a‡	$3.95a‡	$3.60a‡	$3.10a‡	$3.10a‡	$1.85‡a	$2.18a	$2.33a	$1.65r	$1.75r	$0.175o	$0.21o	$13.75g
Baltimore	4.32a	3.91a	3.46a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.50ou
Birmingham	4.23c	3.30cf		2.53ns	2.53ns	2.13ns	2.75s	2.75s	1.55d	1.65d	.18	.18	13.55q
Boston	5.80up	4.52ap	4.80imp	3.00qsz	3.00qsz	1.85qsz					.23o	.275ao	15.00q
Chicago	4.13aq	3.87aq	3.90-3.95q	3.78‡e	3.78‡be	4.13‡be	3.95‡be	3.95‡be	2.25‡e	2.25‡e	.25‡e	.25‡be	13.50e
Cincinnati	4.68c	4.16c	4.18c	2.29‡cu	2.34‡cu	2.34‡cu	2.64‡cu	2.64‡cu	1.89u	1.89u	19o	.24‡ao	13.25yr
Cleveland	1.30‡		3.89‡ae	2.25ae	2.10ae	1.75ae	2.70½	2.70½	3.45‡f	3.45‡f		.23f	16.50u
Dallas	3.75a	3.25a	3.63a	2.65‡a	2.75‡a	1.90‡	2.43	2.63				.27	12.50z
Denver	4.79a	4.29a	4.79	1.90‡	2.10‡	1.37½		3.35‡z			.22	.27ao	11.90
Detroit	4.25a	3.74aqq	3.72a	4.50‡alm	4.50‡alm	4.25‡alm	3.75‡alm	3.75‡alm	2.47aqaa	2.47aqaa	.22p	.25‡ap	13.50e
Kansas City	4.23a	3.83a	4.10a			1.70‡a	2.00‡a	2.00‡a			22a	.26c	14.50
Los Angeles‡	5.12‡k	4.68‡k	5.66c	2.56‡at	2.76‡at	2.41‡at	2.41‡at	2.46‡at			.17‡m	.285m	12.45‡klz
Minneapolis	4.82a	4.11a	4.08a	2.70‡ae	2.70‡ae	1.60‡ae	3.95‡ae	3.95‡ae			.19q		13.80f
Montreal	3.36‡det	3.11‡det	3.72‡det	1.90‡at	2.15‡at	2.40‡a	1.90‡t	2.15‡t	2.00†	2.00†	.20†	28‡†	10.80ek†
New Orleans	4.06b	3.65b	3.85b	2.45b	2.45b	2.09b†			1.65d	1.75d	.275r		14.00o
New York	4.76a	4.25a	3.80		3.20bk	2.85bl	2.85bl				.265nw	.32bw	17.60a
Philadelphia	4.57‡ae	4.16‡ae	3.76‡e	2.85‡a	2.85‡a	2.35‡a	2.70‡a	2.80‡a	2.20‡a	2.20‡a	.25‡.32		14.15d
Pittsburgh	5.65‡bk	4.62‡j	5.00‡bl	2.65‡aqr	2.65‡aqr	3.05‡aqr	2.00‡aqr	2.00‡aqr	2.10ne	2.10ne	.26r	.26r	15.80o
St. Louis‡‡	4.16 4.51a	3.76 4.11a	3.86 4.21a	3.45‡as	3.30‡as	2.40 3.40‡as	1.75‡e	1.75‡e			.255‡e	.315‡co	13.65 14.10q
San Francisco	4.34c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17			.24	.28cl	13.00cw
Seattle	4.22‡a	3.60aq	4.40a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm			.26s	.37cs	13.90‡
Toronto	4.00n	3.84d	4.00n	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.26	.275cu	13.75q

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax. ## Add 2% intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: •a Less 10¢ disc. 15 days. •b Less 2% disc. 15 days. •c Less 10¢ disc. 10 days. •d 10¢ disc. 20 days. •e Truckload lots. •f Fob mill, add $14.58 to $21.31 per car switching charges. •g fob mill + freight. •h LCL. •i Less 2% disc. 10 days. •j Truck lots, fob yard. •k 100 bag lots. •l over 150 sacks. •m Sold in bags only. •n Less 5% disc. 30 days. •o Plus 50¢ for Sat. del. •p 5-9 ton truckload. •q F.o.b. mill

SAND, GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons up. •d Less 5¢ disc. 15 days. •e Less 2% disc. 10th. •f Less 2% disc. 15th. •g Less 5% for cash. •h Less than 5 tons. •i F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •q F.o.b. yard. •r less 5% disc. 15th. •s Less 2% disc. 10 days. •t Less 10¢ disc. 10 days. •u Less 5¢ disc. 10 days. •v Less 2% disc. 15 days. •w Less 10¢ disc. 15 days. •x Incl. 35¢ switch. charge. •y F.o.b. dock. 2% disc. 15th. •z 5-8 tons. •aa Less 5% disc. 15 days.

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocrete, •e 5¼ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •i F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 18. •o Less 2% disc. 10 days. •p Less 2% disc. 10th. •q Less 5% disc. 10th. •r Less 2% disc. 15 days. •s Less 2% disc. cash. •t Siporex, 7 x 8 x 18. •u Less 5% disc. 10 days. •v Less 12% disc. 15th. •w Eff. 1 1 57.

READY MIXED CONCRETE: •a 6 cu yd or over del. Man. •b 25 cu yds or more. •c 10-100 cy. •d 1-3 mi. zone add 15¢ for ea. add'l 1-mi. zone. •e 2,000 lb comp. •f 2,500 lb. comp., less 5% disc. 30 days. •g Less 25¢ disc. 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 6% mun. & prov. tax. •l 1:2¼:3½ base price. •m F.o.b. yard. •n Plus escalator clause. •o Less 2% disc. 15 days. •p Less 50¢ disc. 15 days. •q Less 2% disc. 10 days. Add 50¢ per zone. •r 2000 wgt. •s Less 5% disc. 10 days. •t Incl. 50¢ heating. •u Less 2% disc. 15th. •v Sat. del. + 50¢. •w 10-100 cy. •x Del in zone 20-B.

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45#	Buffington, Ind	$3.40#	Steelton, Minn	$3.45#	Muskegon, Mich	$3.45#	Toledo, O	$3.45#
Clinchfield, Ga	3.45#	Independence, Kan	3.25#	Leeds, Ala	3.30#	Saginaw, Mich	3.45#	Milwaukee, Wis	3.50#
Kingsport, Tenn	3.45#	Hannibal, Mo	3.35#	Duluth, Minn	3.45#	Wyandotte, Mich	3.45#	Green Bay, Wis	3.50#
West Des Moines, Iowa	3.50#	Northampton, Pa	3.50#	Hudson, N. Y.	3.50#	Buffalo, N. Y	3.55#	Ironton, O	3.45#
Nazareth, Pa	3.50#	Universal, Pa	3.60#	Alpena, Mich	3.35#	Oswego, N. Y	3.60#	Montreal City	2.50†
Bath, Pa	3.50#	Waco, Tex. (+ 10¢ tax)	3.35#	Detroit, Mich	3.45#	Cleveland, O	3.50#	W. Winfield, Pa	3.60#
Lesley, Pa	3.50#	Glant, S. C	3.45#	Howes Cave, N. Y	3.50#	Alsen, N. Y.	3.50#	Security, Md	3.50#

† Price to hold for first quarter of 1959. # Price guaranteed through December 31, 1959.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta				$26.60‡S	$45.00‡S	$0.11‡S	$0.235S	$0.12‡nS	$0.235nS	$0.12S	$0.11S	$0.235S
Baltimore	150.00			21.00‡		.09‡	0.18‡	.09‡nE	.18‡nE	.095‡	.10‡	0.19‡
Birmingham		66.00‡		25.12	25.69‡	.1069	0.1093‡	1162	11880	10060	.1069	0.1093‡
Boston				22.00‡qS	46.00‡qS	22.00‡nS	46.00‡nS	105‡nE	24‡nE	14‡0R	.150R	
Chicago	150.00‡a	90.00‡ab	3.95 4.00‡af	22.00‡	32.00‡	20.40‡e	30.40‡e	106‡eH	18‡eH	.08‡		
Cincinnati				26.00‡T				1165‡nST				
Cleveland		89.50‡d	6.30	26.00‡A		26.00‡eA		1165‡eAF			1265‡A	.21.4
Dallas	e	40.80p	e	26.82	46.20	1138	.1983	30.45	52.40	.1100	1138	1983
Denver		62.00a										
Detroit		116.00		30.59		30.38‡s		13.28‡uI		.1133		28
Kansas City	e	e	e	18.00‡		18.00‡s		0825‡neJ		.079‡c	0.125‡c	
Los Angeles	e		e	21.50‡mz		21.50‡mz		23.00‡K		22.00‡maa	23.90‡Xs	26.30‡Xs
Minneapolis			3.73A	26.00‡		26.00‡		0.115‡e		0.105	.1375bb	
Montreal	e	e	e	30.50‡n	43.60n	167‡n	211n	17.80‡nE	22.20‡nE	.155‡n	.242‡n	.27‡nX
New Orleans				20.00‡e		20.00‡e		.095‡ew		.085‡eB	.095‡eBL	.1905‡eB
New York			3.70‡	20.00‡n	42.94n	20.99‡t	40.94‡t	9.61‡uF	19.01‡uF		9.68‡u	19.11u
Philadelphia	125.185	110.120	4.05	18.21‡		20.21‡		0.085 .10‡T		0.085 .10‡T		
Pittsburgh	60.00‡	95.00‡n	6.35n	31.20‡n		31.20‡n		1403‡S		1403‡		
St. Louis‡‡				19.75‡		1825‡		085‡	092‡e	0.165‡	1825‡	0825‡
San Francisco		70.00		23.50‡dd	42.00‡dd	23.50‡dd	42.00‡dd	24.50‡Ndd	43.00‡Ndd	24.25‡nY	24.50‡Xdd	2022‡Xdd
Seattle				25.00‡	40.00‡	25.50‡ez		26.50‡KE		24.25‡eY	23.50‡eX 45.10‡ez‡X	
Toronto		148.50‡‡	4.50‡	41.50‡	61.25‡e	0.2053	0.277‡ee	0.222‡e	0.270‡eee	0.233	0.218‡Ze	27‡Ze

‡ Delivered. ‡‡ Add 4% sales tax. ## Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: •a Less 2% disc. 10th. •b 3 x 3½ x 8. •c 2¼ x 8¼ x 4. •d Truckload lots. •e Not used. •f 2" interior 6 lb. tr. •g Less $1 M disc. 15th. •h 2" tr, 8 lb. •i 3 x 3½ x 8½. •j 2½", 6 lb. tr. •k Used. •l Redshale. •m Pine oak $6.57. •n Truck del. •o Less $1 M disc. 15 days. •p Used: $40; new: $80.

ASPHALTS: •a F.o.b. refinery, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segundo. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. refinery, Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 penetr. •l Less than 100 penetr. •m 40-300 penetr. •n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 80-70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150-300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks. •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS. •H RC 0-5 incl. •I MC 4. •J MC, RC $0.095. •K MC 3, 4, & 5. •L MS. •M MC 1-5, RC 1-5, $0.0918. •N MC 3. •O Truckload. •P F.o.b. refinery, Atlanta. •Q F.o.b. Eldorado, Ark. •R Delivered within 50 mi. •S Less 2% disc. 10 days, net 30. •T Less 1% disc. 10 days. •U F.o.b. refinery. •V Less 2% disc. 15 days. •W SC 2. •X RS 1. •Y SC 1. •Z Incl. 10% Sales Tax. •aa SC 3, 4, & 5. •bb RS 3. •cc In used drums. •dd less disc of $1 ton. •ee 45 Imp. gal. drums

Bids Asked—Low Bidders—Contracts Awarded—

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

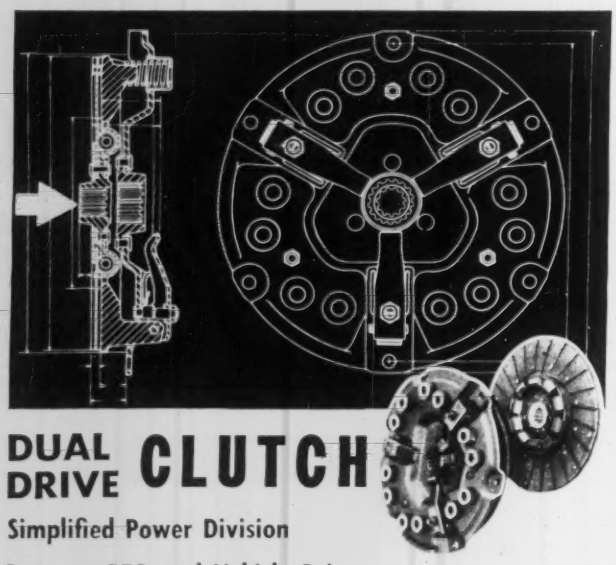
STATE HIGHWAY LETTINGS

STREETS AND ROADS

June 11 New Hampshire, Vermont

▲† Vt., Winooski, MISSILE FACILITY—BA & LB—U. S. Eng., 424 Trapelo Rd., Waltham, Mass. missile facility, FY-59: Ethan Allen Air Force Base consisting of following: (1) tavern, eight 60 ft. x 22 ft. launch heaters, (2) control and maintenance bldg., (3) 162 ft. x 162 ft. concrete bldg., (4) 9 ft. x 14 ft. power plant bldg., (5) 18 ft. x 42 ft. maintenance storage bldg., (6) 9 ft. x 7 ft. x 7 ft. pump house, (7) water, sewer and fire protection facilities, (8) [illegible] and (9) [illegible] and [illegible] and [illegible] and

ROCKFORD



DUAL DRIVE CLUTCH

Simplified Power Division

Between PTO and Vehicle Drives

This is a foot-controlled, spring-loaded clutch of rugged construction. It drives both the vehicle transmission shaft and the power take-off shaft. Power is transmitted to the power take-off by a hollow shaft, driven by a splined hub in the clutch cover plate. This hollow shaft operates at all times the engine is running. The vehicle transmission shaft operates inside the hollow shaft. This Dual-Drive design results in dependable control and transmission of full engine power to vehicle driving-wheels and power take-off.

Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

SEND FOR THIS HANDY BULLETIN Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

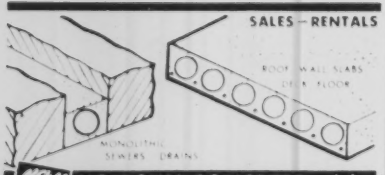
ROCKFORD Clutch Division BORG-WARNER

313 Catherine St., Rockford, Ill., U.S.A.

Export Sales: Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

SALES—RENTALS



NEW! VOIDS IN CONCRETE with ELGOOD INFLATABLE VOID FORMS

REUSABLE RUBBER VOID FORMS FOR SEWERS, SLABS, DRAINS & DUCTS. SUPERSEDES ALL VOID FORMING TECHNIQUES

- ALL DIAMETERS 3/4" TO 120"
- GUARANTEE MINIMUM OF 100 USES Field experience: 250-3000 uses
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Mich.—Hertel-Deyo Co., 5205 S. Division, Grand Rapids, Mich., and C. E. Utterbeck, W. 23 Mt. Pleasant, Mich., LB $2,482,274, 5.3 mi. expressway and six structures, US 10 from Swede Rd. west to Stark Rd., Bay and Midland Counties.

Mich.—Agnell Constr. Co., 2400 N. Grand River, East Lansing, Mich., LB $2,113,148, 5.8 mi. dual roadways and four structures, US 27 (M-6) relocated route between Tobacco Rd., approx. 5 mi. north of Indian River north to Riggsville Rd., Cheboygan Co., CD 4-29.

Mich.—Charles J. Rogers Co., 14836 Grand River, Detroit 27, Mich., Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Mich., and Jutton Kelly, 13240 Alber, Detroit, Mich., LB $2,109,461, 1.7 mi. grading, service road paving, water main and utility alterations, etc., on section from Ford Rd. north to Jay Rd., Southfield Hy., in Detroit, Oakland Co.

BUILDINGS—LB & CA

▲ Joseph J. Duffy Co., 2941 E. 75th Ave., Chicago, Ill., LB $4,725,153, 2 story, HOSPITAL SERVICE BLDG., trades, DIST. PLANTS, 15th St. from Northwestern Pkwy. Rd. Dist. Plant, E. of Pottawatomie Trl. S. LaSalle, Chicago 3, gas-fired steam & electric engr. Bids May 19, CD 4-24.

▲ Joseph J. Duffy Co., 2941 E. 75th Ave., Chicago, Ill., LB $2,938,597, 200,000 sq. ft. HIGH SCHOOL, Bannockburn, HIGHLAND PARK, ILL., Highland Park School Dist., 113, 344 Vine Ave., Highland Park, Ill. Bids May 21, CD 5-18.

▲ Grandville Constr. Co., 21216 W. Seven Mile Rd., Detroit, Mich., CA, $9,000,000, 700 HOME, RESIDENTIAL DEVELOPMENT, sewage plant, MOUNT CLEMENS, MICH., Owner-city contractor.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
June 23, Kansas

▲ † Oklahoma, HERCULES-NIKE MISSILE SITE—BA, c-18—Okla. City, Box 61, Tulsa, Zone 2, battery areas, bldgs. and facilities for Hercules-Nike Missile site near Clinton, Air Defense Base, $1,000,000-$3,000,000, CD 4-9.

▲ † Tex., Amarillo, BATTERY AREAS, etc.—BA, c-18—Okla. City, Box 61, Tulsa 2, Okla., battery areas, Buildings and facilities for Hercules-NIKE Missile, Air Defense Base, $1,000,000-$3,000,000.

▲† Colo., Colorado Springs, CHAPEL—BA, Dr. Orville A. Carlson, A.I.A., 1 E. Pikes Peak, 2 story, basement, 43,000 sq. ft., seating 1,500, Academy Chapel, Air Force Academy, FEB 15, $1,000,000, Plans deposit $125, Skidmore, Owings & Merrill, 141 N. El Paso St., Denver, CD 1-21, under LB.

HEAVY CONSTRUCTION—LB & CA

▲† Blount Bros. Constr. Co., [illegible], CA, $2,790,179, [illegible], Duluth Air Force Base, [illegible], CD 2-27, Duluth, MINN., [illegible], Minn. Bldg. Mpls. 15, CD 2-19.

BUILDINGS—LB & CA

▲ Bank Building & Equipment Co. of America, 1110 Hamilton Ave., St. Louis, Mo., A, $3,000,000, American National Bank and Palmer Arcade, at 4th and Last Sixth and Minnesota Sts., ST. PAUL, MINN., American National Bank, 419 Robert St., St. Paul, Minn.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
June 24, 25, California

▲ Calif., Sacramento, BA to [illegible], Sacramento Municipal Utility Dist., 59th and R Sts., 162 ft. high Union Valley Dam, El Dorado Co., [illegible] Upper American River Proj., earthfill section, involving 12,000,000 cu. yd. material, est. $12,000,000, CD 12/8/59.

HEAVY CONSTRUCTION—LB & CA

▲† Baldwin Contg. Co., Inc., [illegible] 5th St., Marysville, Calif., CA $4,124,900, [illegible] Air Force Base, Air Station, MAY 20th, [illegible], LEMOORE, CALIF., Dist. Public Works Office, 12th Naval Dist., Room C-112, [illegible], Bids May 22, CD 5-20, [illegible] awarded May 22, CD 5-20, under LB.

BUILDINGS—LB & CA

▲† Malan Constr. Corp., 3 Park Ave., New York, N.Y., LB $3,440,000, 111 ft. high, BOILER PLANT, [illegible], Riverside, [illegible], Bids May 20, CD 5-20.

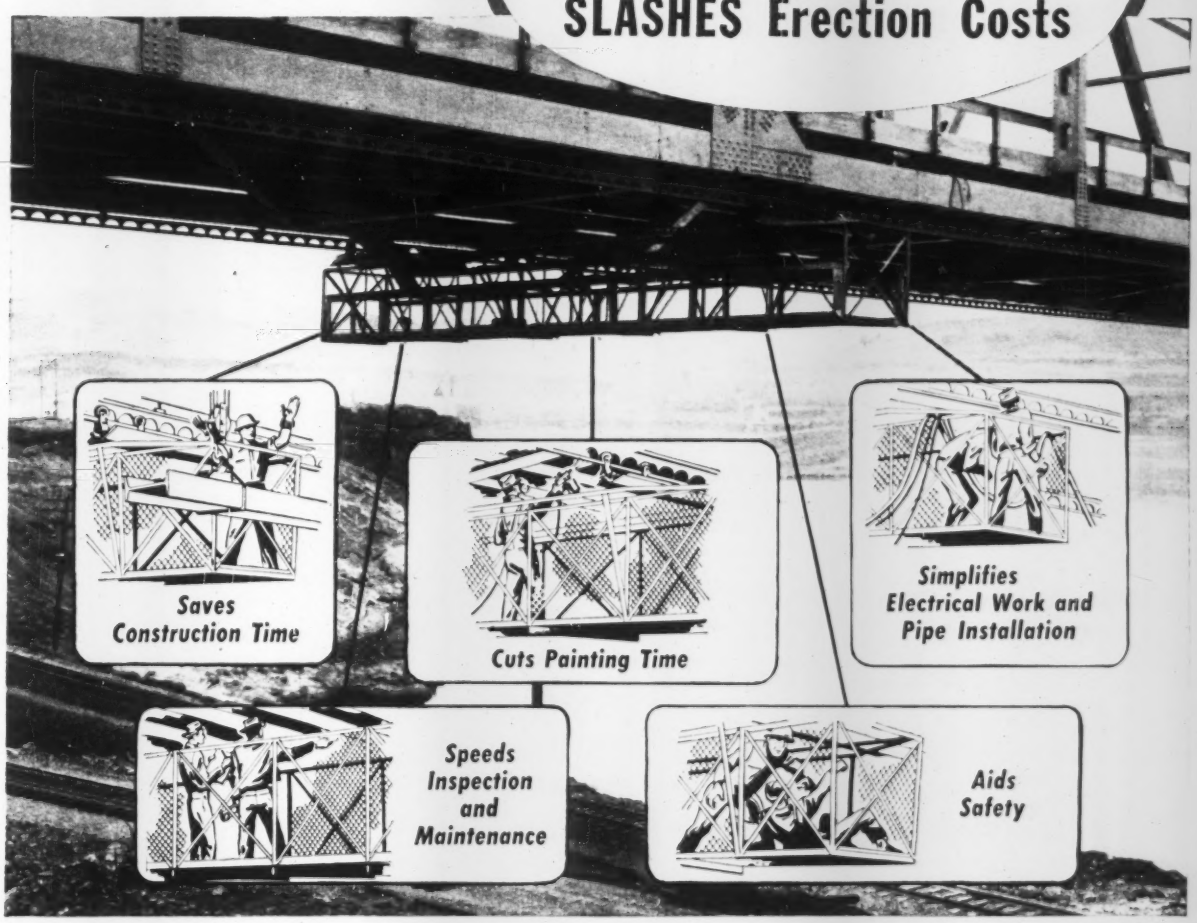
▲† Inland Empire Builders, Inc., Box 1055, H. C. Stanton, Riverside, [illegible] J. C. Bonsigna Constr. Co., 1912 4th Ave., Scott & Associates, Inc., Architects, McLaughlin, Inc., Engineers, [illegible], A, $13,463,280, Boulevard Concrete, [illegible], 1420 E. 1st, LEWIS, WASH., [illegible], 1519 S. Alaskan Way, Seattle 4, Wash., Bids May 20, CD 2-20, under LB.

▲ H. B. Nicholson, [illegible], Pasadena, [illegible], CA, $2,693,000, [illegible], $3,400,000, [illegible], Dodger Stadium, [illegible], 1425 E. Pasadena St., Los Angeles, CALIF., Bids May 21, CD 5-21, under LB.

(Continued on page 78)

Illustrated is one of six Cleveland Tramrail Travelers on the Dalles Bridge over the Columbia River. Traveler length is 37'-6". Operation is by handwheel drive. Complete fence enclosure assures maximum safety.

TRAMRAIL Bridge Traveler SLASHES Erection Costs



BIG savings in time and money can be made with a Cleveland Tramrail bridge system both during erection and later for inspection and servicing.

Advantages that the equipment provides for erection work alone usually justify its installation by a bridge contractor — even if not called for in the specifications. Time saved in many phases of bridge construction makes the equipment profitable. The savings do not stop with the completion of a bridge. They continue year after year by reducing man-hours required for inspection, painting and miscellaneous servicing work.

It will pay you to look into the possibilities that a Cleveland Tramrail Bridge System offers for new bridges to be built, as well as for existing ones.

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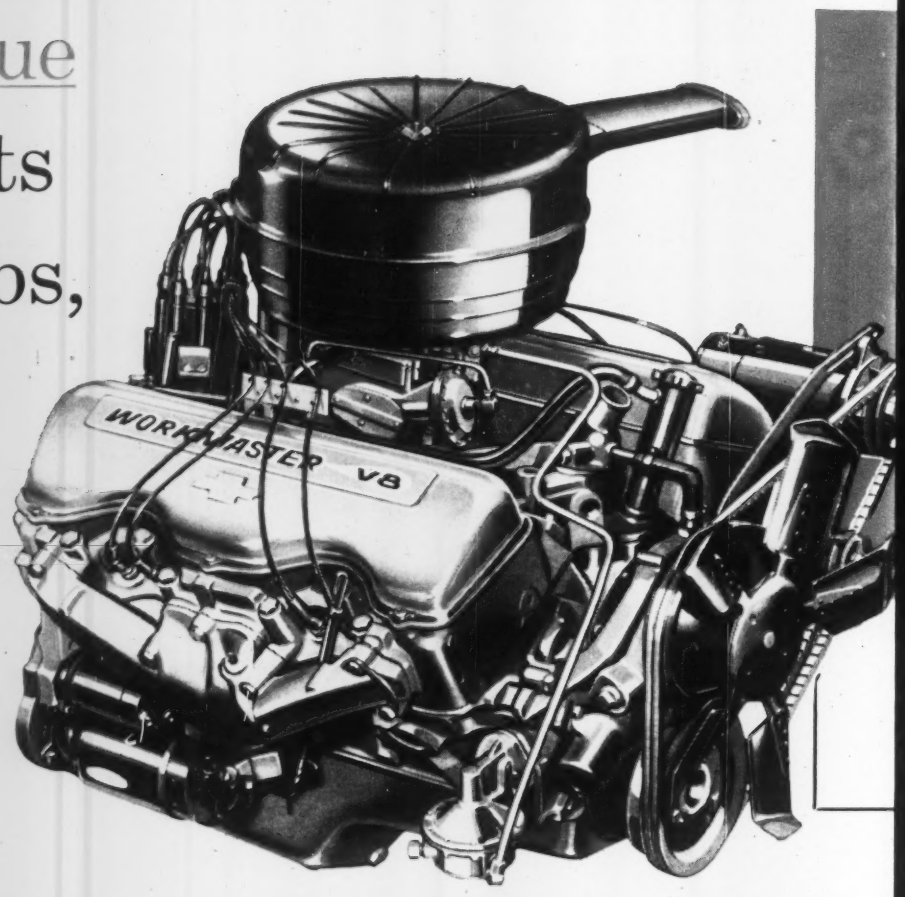
CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

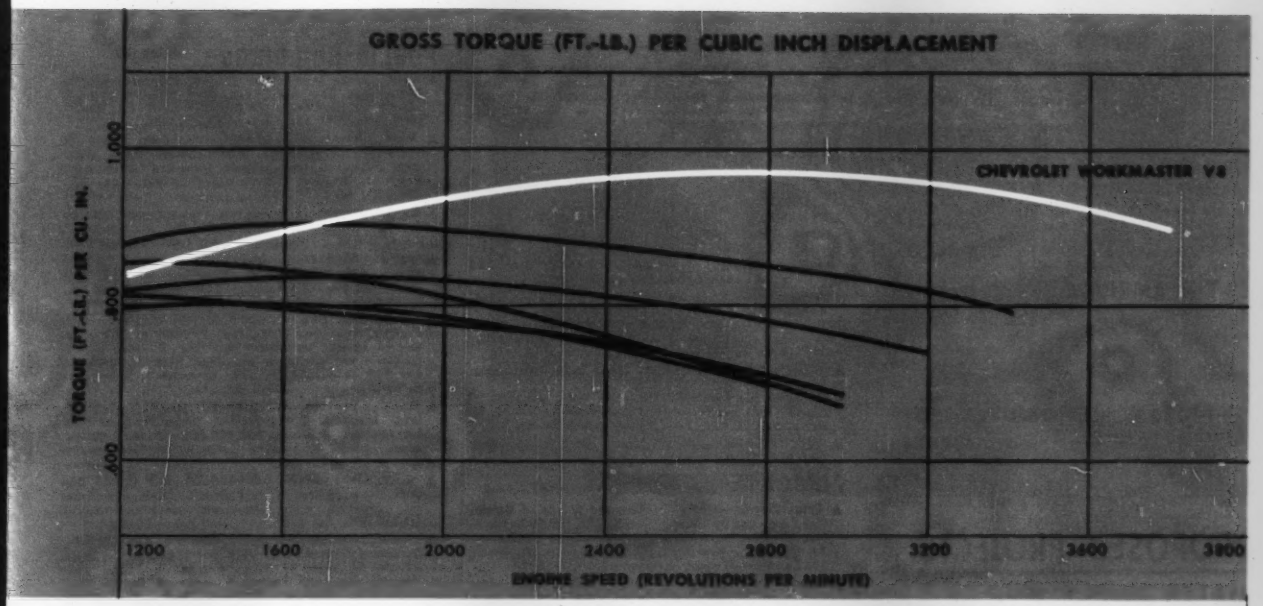
It's torque that beats tough jobs, and this engine has it to spare!



CHEVROLET'S 348-CUBIC

It's torque you need in a big-truck engine. Torque that gives the truck plow-horse pulling ability at low speeds . . . torque that assures the power to keep big loads moving, whether it's through the rough or over the road. And Chevrolet's 230-h.p. Workmaster V8, with efficient Wedge-Head design, short piston stroke and the right kind of valve timing, puts out a brand of torque that's made to order for your toughest big-tonnage hauls.

No job's too tough for a



Here's proof that Chevrolet's 348-cubic-inch Workmaster V8 puts out plenty of torque — all the pull and power you'll ever need for your high-tonnage hauls. The white curve above shows that the Workmaster provides high torque throughout the *entire range* of operating speeds; that it puts out high torque at low r.p.m.'s where you need it for tough off-road situations, maintaining high torque right up to governed speed. The black curves on the above graph represent the torque output of typical heavy-duty 6-cylinder engines of between 330 and 390 cubic inches of displacement. (Each of the above curves demonstrates actual torque output efficiency, on a basis of gross foot-pounds of torque per cubic inch of displacement.)

-INCH WORKMASTER V8

Among today's big-truck V8's, Chevrolet's 348-cubic-inch Workmaster is outstanding for its ability to produce extra foot-pounds of work-whipping torque. This high torque output is the natural result of the Workmaster's unique design characteristics. Short piston stroke and large piston area, for example, comprise a torque-producing advantage, and *this engine provides the shortest stroke in its class.*

Advanced Wedge-Head design, with its fully machined combustion chambers, means high torque, too. It assures high turbulence of the fuel-air mixture and balanced power output from each cylinder. The Workmaster V8 has high volumetric efficiency . . . takes in the fuel-air mixture *efficiently* at all speeds. This, combined with a camshaft design that gives just the right valve lift and timing, assures high torque—extra pulling power to get you through the tough spots!

And this engine is designed for *durability* as well. Tough Moraine 400 bearings, for instance, last up to 7 times longer than ordinary bearings. Stellite-faced, high alloy exhaust valves resist wear. Tough induction-hardened crankshaft journals last longer . . . Rotocoil exhaust valve rotators increase valve life by as much as 300%.

For these reasons and many more like them, the Workmaster is a solid performer — a sure answer to extra savings on big-tonnage runs. Now *standard equipment* in all Chevrolet Series 90 and 100 trucks, it powers G.V.W.'s up to 25,000 lbs. and G.C.W.'s up to 48,000 lbs. . . . or, in Series 100 tandem models, G.V.W.'s up to 36,000 lbs., G.C.W.'s up to 50,000 lbs. For the kind of torque and toughness you need to do big jobs better, see your Chevrolet dealer about a Workmaster V8! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Chevrolet Truck!

CHEVROLET

(Continued from page 74)

geles, Calif. Bowen & Bowen, 2873 Colorado Blvd., Los Angeles, Calif.; engrs. Bids Apr. 30; awarded May 18. CD 5/7; under LB.

▲ Bechtel Corp., 220 Bush St., San Francisco, Calif., CA KRAFT PLANT and PAPERBOARD MILL, SAN JOAQUIN, CALIF. Fibreboard Paper Products Corp., 475 Brannan St., San Francisco, Calif.

▲ Woodside Homes, 8060 Wilshire Blvd., Los Angeles, Calif., Owner Builds, $2,498,200, 119 DWELLINGS, Tract 24491, WOODLAND HILLS, CALIF. Charles E. DuBois, 17057 Ventura Blvd., Los Angeles, Calif., archt.

CANADA

BUILDINGS—LB & CA

▲ Frid Construction Co., Ltd., 605 James St. N., Hamilton, Ont., CA $2,761,300 (13 bidders). 5 story NURSING WING, Brant Museum site, BURLINGTON, ONT. Bd. Governors, Joseph Brant Memorial Hospital, Burlington, Ont. Bids May 5; awarded May 22. CD 4/14.

LATIN AMERICA

BUILDINGS—LB & CA

▲ Lummus Co., 385 Madison Ave., New York, N.Y., U.S.A. CA $21,000,000, design and construct Salamanca REFINERY addn. and 220 ton per day ANHYDROUS AMMONIA PLANT, MEXICO. Pemex (Government of Mexico) Mexico City, Mexico.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ American Machine & Foundry Co., 261 Madison Ave., New York, N. Y., U. S. A., CA Est. $3,000,000. NUCLEAR RESEARCH LABORATORY, Istanbul Airport, TURKEY. Turkish Atomic Energy Comm., Ankara, Turkey.

PROPOSED PROJECTS

WATER SUPPLY

▲ N. Y., Troy—City, P. Wks. Dpt., Bd. Contr. & Supply, City Hall, water transmission plain, filtration plant, booster pumping stations, storage reservoirs, conforming mains. $7,950,000.

SEWERS, WASTE DISPOSAL

▲ O., Xenia—County Greene Co., Court House, sanitary sewer dist. to serve Beaver Creek Twp. $2,000,000. Ralph L. Woolpert Co., 360 W. 1st St., Dayton, engr. engr. Correction—engineers' address). CD 2/9.

▲ Ore., Salem—City, City Hall, sewer and sewage treatment plant, $2,000,000, Cornell, Howland, Hayes & Merryfield, 1600 Western Ave., Corvallis, consult. engr. Correction—engineers' address). CD 3/27.

BRIDGES

▲ N. Y., New York—Dpt. P. Wks., Municipal Bldg., Zone 7, lift span Broadway Bridge over Ship Canal, Manhattan-Bronx Boros., Proj. PW-32, $3,396,000. Tippetts-Abbett-McCarthy-Stratton, 62 W. 47th St., consult. engrs. CD 1/10/57.

STREETS AND ROADS

▲ Fla., Miami—Comrs. Dade Co. Courthouse, widn. N.W. 12 Ave. from 20 to 36 Sts. 4 lane divided highway with overpass at Florida East Coast R.R. tracks $2,800,000.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Burlington-Lexington and Woburn—Interchange Rtes. 128 and Rte. 3. $5,500,000. Constr. late 1959.

▲ NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,
Onondaga Co.—constr. approx. 14 mi. various interstate hy. connections in and near city of Syracuse, FAI Proj. $2,500,000.

▲ NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany, Zone 1,
Westchester Co.—reconstr. approx. 4.4 mi. Rte. 1 (Boston Post Roads) and its connection in city of Rye and village of Port Chester, FAI Proj. $4,000,000.

▲ Tex., Richardson—City, street paving and imprvs. $2,520,000.

AIRPORTS

▲ Colo., Denver—AIRPORT—City and County of Denver, City and County Bldg., voted $20,000,000 bonds, May 19, Stapleton Airport, imprvs. James F. Buckley, 30 E. 40 St., New York, N. Y., and Ken R. White, 1567 Marion, Denver, consult. engrs. CD 3/2.

▲ Mass., East Boston—AIRPORT OFFICE, etc.—Mass. Port Auth., 14 Court Square, Boston, second story addn. airport office, $6,000,000. CD 3/18; strengthen runways and aprons and expand runways, increase parking areas, $1,500,000. J. E. Greiner Co., c/o owner, engr. Constr. 1959.

PUERTO RICO

▲ Puerto Rico—HOTEL—Caribe Plaza Hotel, c/o Rene O. Ramirez, archt., 1508 calle Maribel, San Juan, hotel Condado Sect., San Juan, $8,000,000. Curtis & Davis, 338 Baronne St., New Orleans, La., U. S. A., assoc. archts.

▲ Puerto Rico—HOTEL—Sheraton Hotel, San Juan, plans by Toro & Ferrer, 560 calle Montserrate, Hato Rey, San Juan, 22, story hotel Condado Section. $12,000,000. Warner, Burns, Toan & Lunde, 414 Madison Ave., New York, N. Y., U. S. A., assoc. archts.

PUBLIC BUILDINGS

▲ Calif., Santa Cruz—COURTHOUSE, etc.—Bd. Supervs. Santa Cruz Co., Courthouse, bond election June 2: (1) county courthouse (2) county hospital (3) agricultural bldg. (4) law library. $3,250,000.

▲ Minn., Minneapolis—SCHOOL—Bd. Educ. plans by Thorshov & Cerny, Inc., 400 Metropolitan Bldg., Junior High School in area between Knox and Irving Aves. North and between Fiftieth and Fifty-first Aves. $2,250,000. CD 11/21/57.

▲ N. J., Dumont—SCHOOL—Bd. Educ., bond election June 30, school expansion, $3,000,000. Robert Green, Tower Hill N., Tarrytown, N. Y., archt. CD 6/16/58.

▲ N. J., Morristown—SCHOOL—Bd. Educ. Twp. of Morris, defeated bonds at referendum May 12, high school, $2,650,000. Epple & Seaman, 901 Broad St., Newark, archts. CD 3/2.

▲ N. Y., New York—NURSES' RESIDENCE, etc.—Dpt. P. Wks., Municipal Bldg., Zone 7, plans by Charles B. Meyers Assocs., 31 Union Sq., Proj. HD-59A, nurses' residence and school, Metropolitan Hospital, 99th St. and FDR Drive. $3,870,129. Greenhut & Tuffel, 114 E. 32nd St., engrs. CD 7/22/57.

▲ N. Y., New York—TERMINAL MARKET—Dpt. P. Wks., Municipal Bldg., Zone 7, Bronx Terminal Market for Dpt. Markets, $32,600,000. Madigan-Hyland, engrs., 28-04 41st Ave., Long Island City, making survey. CD 6/10/57.

▲ N. Y., Port Jervis—SCHOOLS—Central School District, plans by Carl W. & Robert T. Clark, 625 James St., Syracuse, high school and elementary school, $3,350,000. CD 5/13.

▲† Tenn., Memphis—FEDERAL OFFICE and COURT—General Service Admin., 18th and F Sts. N.W., Wash. 25, D. C., plans by A. L. Aydelott & Assocs., 2080 Peabody Ave., and Thomas F. Faires & Assocs., Inc., Falls Bldg., federal office and court bldg., bounded by Washington, Front, Poplar and Main Sts. $11,500,000. CD 2/10/58.

▲† Tenn., Oak Ridge—RADIATION LABORATORY—Atomic Energy Comm., 1901 Constitution Ave. N.W., Wash. 25, D. C., high level radiation laboratory, Oak Ridge National Laboratory, $3,000,000. Vitro Engineering Co., Div. Vitro Corp. of America, 261 Madison Ave., New York 16, N. Y. engrs. CD 4/12.

▲ Tex., Houston—SCHOOLS—Houston Ind. School Dist., 1400 Capitol St., voted $32,000,000 bonds, May, 16 schools consisting of following:
Junior High School, San Felipe Rd. and Bering Sts., $2,500,000.
Senior High School, Richmond Ave. and Hillcrest St., $2,750,000.
Senior High School, Chimney Rock Rd. and Gasmere St., $2,750,000.
Junior High School, west of Black Pr. High School area, $2,250,000.
Junior High School, Dates School area, $1,750,000.
Junior High School, Trinity Gardens area, $2,250,000.
Senior High School, south of Alcott and west of Mykawa Rd., $2,250,000.
Senior High School, Scott St. and Reed Rd. area, $3,500,000.
Elementary school, Westbury area, $475,000.
Elementary school, Meyerland area, $475,000.
Elementary school, Pine Point area, $400,000.
Elementary school, north of Wesley School area, $450,000.
Elementary school, N. W. of Durkee and Burbank Schools, $475,000.
Elementary school, Little York Rd., $475,000.
Elementary school, N. E. of Dean School, $500,000.
Elementary school, Telephone Rd. and Westover St., $450,000.
Elementary school, south of Sunnyside School area, $550,000.
Elementary school, Belfort Ave. and Chocolate Bayou Rd., $500,000.
Elementary school, Southern area, $400,000.
Elementary school, west of Mangum Rd., $475,000.
Various schools, addns., renovations, $3,000,000. CD 3/17.

COMMERCIAL BUILDINGS

▲ Calif., Canoga Park—DWELLINGS, Valley Park, Canoga, 23400 Van Owen St. plans by Dorner & Dorner, 13310 Moorpark St., Sherman Oaks, 329 dwellings, T-141, 21893. $3,500,000.

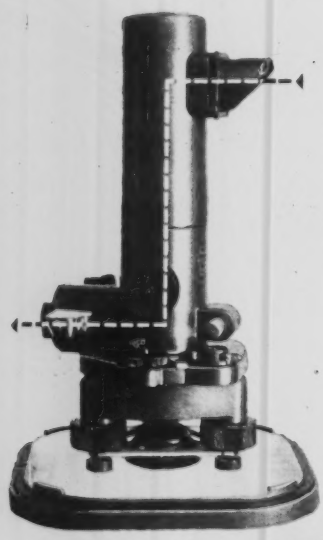
▲ Colo., Denver—HOSPITAL—Sisters of Mercy, Mercy Hospital, 1e Ave. and Milwaukee St. plans by Gordon Wright & Associates, 231 16 St., Denver Bldg., new hospital. $8,000,000. To start 1960. CD 3/13/58.

▲ Conn., Norwalk—HOSPITAL—Norwalk Hospital, [illegible] $3,000,000.

▲ Ind., Indianapolis—SHOPPING CENTER, [illegible] $5,000,000.

▲ Mass., Boston—HOSPITAL—[illegible] $4,000,000.

▲ N. J., Morristown—[illegible] $5,000,000.



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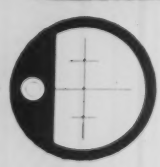

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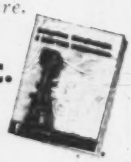

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▲ N. J., Paramus—STORE—Gimbel Bros., Broadway and 33 St., New York, N. Y., plans by Welton, Beckett & Assoc., 11 W. 42 St., New York, N. Y., 3 story, 250,000 sq. ft. store, Rtes. 4 and 17. $5,000,000. Bids this summer, Ammann & Whitney, 111 8 Ave., New York, N. Y., consult. engrs.; Abbott, Merkt & Co., 10 E. 40 St., New York, N. Y., engrs.; Copeland, Novak & Israel, 744 Lexington Ave., New York, N. Y., assoc. archts. CD 9-12

▲ N. J., Paterson—COLLEGE ADDNS.—State of New Jersey, State House, Trenton, plans by LaPierre, Litchfield & Partners, 292 Madison Ave., New York, N. Y., cafeteria, science laboratory and heating plant, Paterson State College. $2,500,000. Bids in June. Theodore J. Canfield, 150 Broadway, New York, N. Y., mech. engr.; Di Stasio & Van Buren, 36 Liberty St., New York, structural engrs. CD 2-28-58

▲ O., Cleveland—APARTMENT—Casey Corp., c/o David Kangesser, 211 Prospect Ave., Zone 15, plans by Richard Hawley Cutting & Assoc., 10550 Euclid Ave., Zone 6, 12 story apartment, E. 9th St. between Rockwell and St. Clair Ave. $17,000,000

▲ Pa., Ardmore—HOSPITAL—Heart Council of America, Inc., c/o 230 Windsor Ave., Narberth, plans by Harold W. Wise, 1220 Old York Ave., hospital and staff bldg. $3,000,000. Thomas N. McCormick & Bunnell, Phila., consult. engr.

▲ Pa., Bala Cynwyd—MOTEL, etc.—Hot Shoppes, Inc., 4200 Block Rd., Bethesda, Md., plans by A. G. Odell, Jr. & Assoc., 521 5th Ave., New York, N. Y., motel, restaurant, etc., Rte. 1 and Montgomery Ave. $5,000,000. Bids Summer

▲ R. I., Providence—HOSPITAL—Miriam Hospital, 164 Summit Ave., plans by Katz, Waisman, Blumenkrantz, Stein & Weber, 250 4th Ave., New York, N. Y., hospital addn. $3,500,000. CD 1-14

▲ Tex., Austin—SHOPPING CENTER—Capitol Plaza Shopping Center, 402 Capitol National Bank Bldg., plans by Spencer Shank, 271 Huntington Ave., Boston, Mass., and Terry R. Lee & Assocs., 1127 Austin St., Houston, shopping center, Phase 2. $2,500,000. CD 4-24-58. Under T. W. Bernard & Assoc., Los Angeles

▲ Tex., Houston—HOSPITAL—St. Joseph's Hospital, 1910 Crawford St., Phase 2, hospital addn. $2,500,000. Bids soon. Phase 3, hospital addn. $4,000,000; Phase 4, hospital addn. $3,500,000. 10-year program. CD 5-9-57

▲ Wis., Milwaukee—HOSPITAL—Memorial Hospital, c/o Mercy Hospital, 2419 N. 2 St., plans by Fred Gossmann, 5455 W. Burleigh St., hospital. $3,000,000. To go ahead 1960

▲ Ont., Ottawa—SHOPPING CENTER—A. J. Freiman Ltd., Rideau St., Ottawa, 40 unit shopping center, Queensway and St. Laurent Blvd. $5,000,000. DeLeuw, Cather Co. of Canada Ltd., 42 St. Clair Ave. E., Toronto, consult. engrs.

▲ Ont., Windsor—SCIENCE—Essex College, Assumption University, 348 Huron Line, plans by Pennington & Carter, Morris Block, pure and applied science bldg. for Assumption University. $5,000,000. L. H. Ingersoll, 348 Eastlawn Blvd., structural steel consultant. CD 11-24

▲ Que., Aylmer—HOUSES, etc.—Aylmer Development Corp., Glenwood Domain, R.R. 2, Aylmer East, plans by Bazil Miska, 201 McLaren St., Ottawa, Ont., 200 houses, 20 apartments, Glenwood Domain Housing Development. $3,800,000. Constr. 1960 and 1961

▲ Que., Arthabaska—HOSPITAL—Religieuses Hospitalieres de St. Joseph de Montreal, 251 Pine Ave. W., Montreal, plans by David Deshaies, 44 Rue Notre Dame, Joliette, 5 story, basmt. hospital addn. $4,000,000

INDUSTRIAL BUILDINGS

▲ Del., Edge Moor—GENERATING UNIT—Delaware Power & Light Co., 600 Market, Wilmington, 4th unit, 250,000 kw generating unit at Edge Moor Power Plant. $5,000,000

▲ La., Plaquemine—PLANT—Dow Chemical Co., Midland, Mich., polyethylene and polystyrene chemicals plant, refinery plants. $12,000,000. CD 4-28-58

▲ N. Y., Lackawanna—PLANT—Bethlehem Steel Corp., 701 E. 1st St., Bethlehem, Pa., sintering plant, Lackawanna Works. $15,000,000. CD 1-31-58

▲ O., Warren—HOT STRIP MILL—Republic Steel Corp., 1456 Republic Bldg., Cleveland, Zone 1, hot strip mill to roll 500,000 sq. ft. steel plate. $45,000,000

▲ Okla., Tulsa—PLANT—Dow Chemical Co., Box 1, Midland, Mich., solvent dewaxing plant at refinery. $7,000,000. To go ahead in September

▲ Pa., Essington—LABORATORY—Atlantic Refining Co., 260 S. Broad St., Philadelphia, plans by Ayton Birkett & Assocs., and 10 Sub Engrs., Assoc. Architects-Engrs., 5657 Wilshire Blvd., Los Angeles, Calif., research laboratory. $10,000,000. Bids this summer

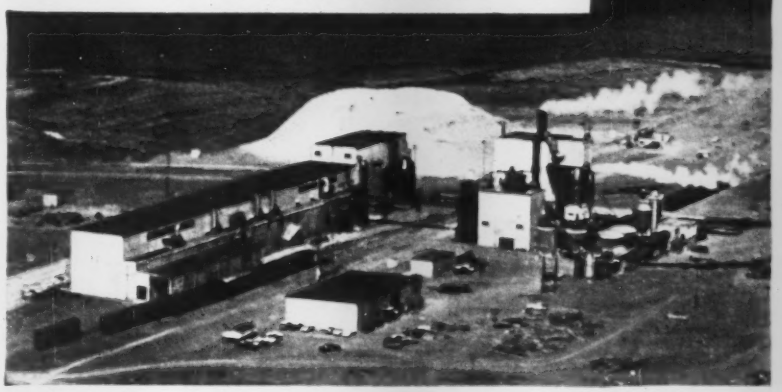
UNCLASSIFIED

▲ Arizona—RAILROAD—Atchison, Topeka & Santa Fe R.R. System, Chief Engr., 80 Fe, Chicago, Ill., engr. 121 mi. Los Angeles to Phoenix, double track, from Williams to Ash Fork. $19,300,000. 45 mi. track from Ash Fork to Seligman. $2,900,000. Applied to ICC for permission to build

▲ N. J., Newark—SPORTS ARENA—City, City Hall, sports arena for 50th Newark. $4,000,000

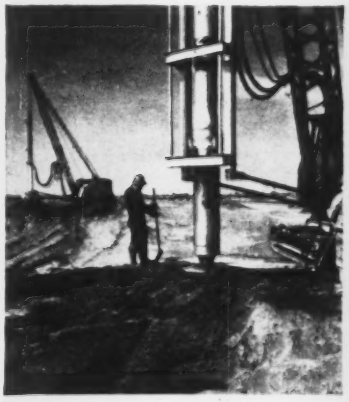
(Proposal Advertisements see pp. 93 to 95)

Cascade Kraft Corporation, Pulp & Paper Mill, Wallula, Wash.
Structural Engineers: R. M. Tracey & Associates, Seattle, Wash.
Contractor: Swinerton & Walberg, Oakland, Calif.
Soil Consultant: Dames & Moore, Portland, Oregon



Vibroflotation®

was used to compact the sandy soil at paper mill in Wallula, Washington.



The soil compaction job for the Cascade Kraft Corp. plant site proceeded at a rate of 4,000 cubic feet of soil compacted per hour with two Vibroflot machines. Each compaction consumed 3 or 4 tons of sand.

The foundations for a new paper mill of the Boise-Cascade Corp. at Wallula, Washington, were built on sand compacted by VIBROFLOTATION. A total of 1304 compactions were made to an average of 15 feet below the bottom of footings.

Vibroflotation provided a substantial saving of about $35,000 over alternate piling foundation solution. Additional savings were realized through elimination of all formwork for footings.

Vibroflotation stabilizes granular soil so effectively that excavations retain neat, vertical walls even after placement of reinforcing steel and pouring of concrete.

Write for booklet E-20

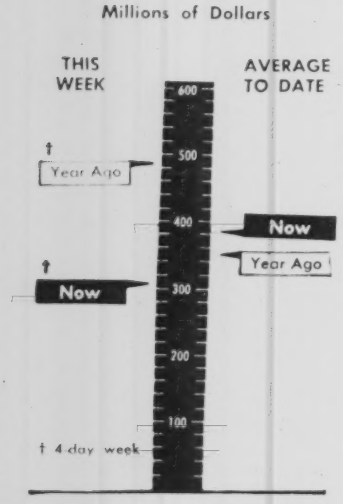
Proven Applications

Deep Foundations • Dams
Bridges • Airports • Tunnels
Commercial Foundations
Industrial Foundations

VIBROFLOTATION FOUNDATION CO.
930 Fort Duquesne Boulevard
Pittsburgh 22, Pa.
ATlantic 1-2500

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

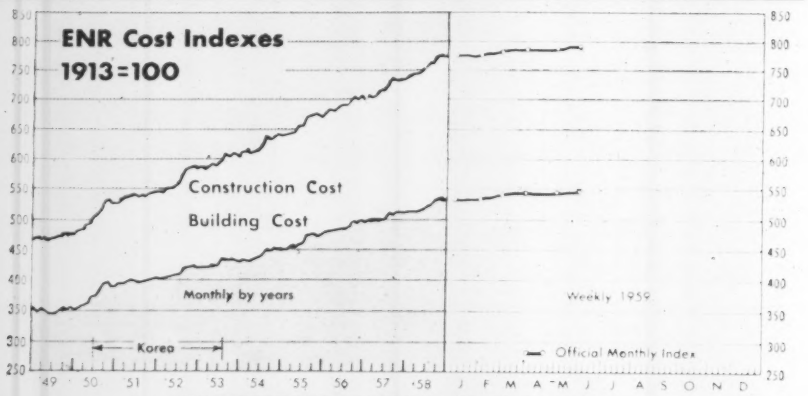
	†This Week millions	Cum. 23 wks 1959	Chge '58-'59 %
All Heavy Constr	$345.7	$8,787.0	+ 7
By Ownership			
PRIVATE	177.9	4,300.4	+ 16
PUBLIC	167.8	4,486.6	0
State & Municipal	104.3	3,151.8	− 6
Federal	63.5	1,334.8	+ 16
By Type of Work			
PUBLIC			
Waterworks	4.0	193.2	+ 38
Sewerage	9.2	270.0	+ 6
Bridges*	13.9	256.4	+ 12
Highways	44.0	1,297.3	0
Earthwork, Waterways	8.0	338.2	−16
Buildings, Excl. Housing	36.0	1,181.1	+ 2
Housing	13.9	308.2	− 37
Unclassified	11.8	622.4	+ 20
PRIVATE			
Buildings			
Mass Housing	81.8	1,950.6	+ 16
Commercial	23.5	971.3	+ 3
Industrial	17.8	1,196.7	+ 38
Unclassified	18.8	178.6	−13

* Includes private bridges † 4-day week

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of May 28 millions	Cum. 22 wks 1959	Chge '58-'59 %
Corporate Securities	$263.1	$1,730.2	−29
State and Municipal:			
All Except Housing	79.7	2856.5	− 11
Housing		30.6	+ 51
Federal Loans	2.0	62.5	− 23
Federal Aid			
Total Nonfederal	$345.4	$4679.7	− 18
Federal Appropriations:			
Projects in U. S.			100
Outside U. S.			
Total New Capital	$345.4	$4679.7	− 26


ENR Cost Indexes
1913=100
Construction Cost
Building Cost
Monthly by years
Weekly 1959
Korea
Official Monthly Index
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 J F M A M J J A S O N D

CURRENT COST INDEXES

ENR INDEXES (1913 = 100), 20-cities' average	Week of May 28* 1959	% Change from Apr. 30 1959	% Change from May 1 1958
Construction Cost	795.16	+0.6	+5.8
Building Cost	548.35	+0.7	+5.7

* Official Monthly Index for June.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.000; Building Cost by 1.650.
1949 = 100: Divide Construction Cost by 1.776; Building Cost by 1.518.

WAGE RATES, 20-cities' average

	June 1959	% Change from May 1959	% Change from June 1958
Common	$2.549	+0.6	+4.5
Skilled (average 3 trades)	3.846	+0.7	+4.5
Bricklayers	4.084	+0.6	+3.8
Structural Ironworkers	3.878	+0.8	+5.5
Carpenters	3.637	+2.5	+6.0
Equipment operators (average three types)	3.449	+0.1	+2.4

MATERIAL PRICES, 20-cities' average

Structural Steel (average 3 mills), per cwt	5.50	0	+4.3
Lumber, 2x4 Fir, per M fbm	123.40	+2.0%	+9.5
Lumber, 2x4 Pine, per M fbm	109.77	+1.7	+9.5
Cement, bulk, per bbl	3.98	0	+0.5
Sand, per ton	2.489	−0.1	−0.5
Ready-mixed concrete, per cu yd	14.02	+1.0	+1.2
Gypsum sheathing, ½"x2'x8', per Msf*	62.875	0	+0.1
Fiber board sheathing, ½" sq. ed., per Msf*	71.403	+0.2	0
Mineral wool insulation, 3" batts, per Msf*	69.135	−0.2	−2.0
Crushed stone, 1½", per ton, CL	2.741	−0.1	−3.4
Concrete blocks, sand/gravel, 8"x8"x16", each*	.226	0	−0.9

	May 1959	Apr. 1959	May 1958
Brick, common per M	38.52	0	+1.4
Lime, hydrated finishing, per ton, CL	39.036	+1.3	+6.1
Structural clay tile, 3x12x12", per M, 2,000 up*	483.16	−1.6	−0.3
Vitrified clay sewer pipe, std 12", per ft	1.342	−2.5	+3.0
Concrete sewer pipe, 12", per ft	1.342	0	+4.0

* Delivered, truck lots

ENR INDEX REVIEW

	Construction Cost 1913 = 100	Construction Cost 1949 = 100	Building Cost 1913 = 100	Building Cost 1949 = 100	Volume 1913 = 100	Volume 1949 = 100
Jun	757.31	158.77	521.09	148.13	661	191
Jul	762.52	159.86	524.29	149.03	705	204
Aug	764.41	160.26	525.62	149.41	575	166
Sept	773.47	162.15	535.02	152.09	541	156
Oct	775.30	162.54	536.53	152.51	446	129
Nov	774.12	162.28	534.96	152.07	384	111
Dec	773.81	162.22	534.79	152.02	466	135
1958 Average	759.16	159.15	524.68	149.15	531	153
1959						
Jan	778.28	163.16	536.23	152.43	460	133
Feb	778.76	163.26	537.25	152.72	472	136
Mar	781.35	163.81	540.32	153.59	586	169
Apr	784.41	164.45	542.93	154.33	532	154
May	790.37	165.70	544.11	154.76	700	202
Jun	795.16	166.70	548.35	155.87		

IT'S THE BIGGEST!

THE NEW LE ROI 1200 ROTARY

— world's largest portable rotary air compressor

— with cost-saving twin-unit design

Here's the giant economy size portable air compressor that can't be beat for capacity, flexibility, compactness — and certainly not for low-cost air power or money-saving design and performance!

The new Le Roi rotary is a portable cyclone — delivers a full 1200 cfm of air at 100 psi — plenty of power for the *big* demands of pile driving, large-hole quarry drilling, tunnel jobs, multiple pipe line rigs, shaft jumbos, or as a stand-by source of plant air. One 1200 replaces a dozen small portables — eliminates site clutter and the need for extra men and trucks for hauling—minimizes bet-a-gen-job delays and slashes fuel consumption and maintenance.

Twin compressors operate at 1800 rpm, engines at 2000 rpm. Unit weighs 14,700 lbs. dry, has an 18 ft. turning radius, and meets all existing state highway regulations.

Twin-unit design gives you two individually-controlled compressors that can be operated separately for 600 cfm or together for 1200 cfm output. It permits one unit to be shut off when air demand falls below 600 cfm, or for servicing, without interrupting work. Compressors can be alternated to reduce wear — interchangeable engine and compressor parts provide added protection against costly emergency shutdowns in the field.

Get the complete design-performance story from your Le Roi distributor. He'll be glad to send you literature — and even happier to put the new 1200 rotary through its paces for you.

PC 802

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Newmatic air tools, portable and Tractair® air compressors, stationary air compressors. Write us for information on any of these products.

WABCO

Installing a trunk main in Queens. The Mayor of New York, Hon. Robert F. Wagner; Armond D'Angelo, Commissioner of the Department of Water Supply, Gas and Electricity; Edward J. Clark, Chief Engineer

REPORT FROM NEW YORK CITY

685,000 ft of steel pipe—and never a break!

New York's experience with large-diameter steel mains dates back to 1910—nearly 50 years. In fact, since the mid-twenties, the City has specified steel pipe for mains 30 in. ID and over. The City now has in operation some 685,000 ft—nearly 130 miles—of steel pipe.

The chief reason for using steel has been to avoid the tremendous damage that can be caused by the breaking of mains made of brittle materials, resulting in the flooding of subways, basements, etc. New York's policy has paid off. All steel mains have been in virtually continuous operation since their installation, with never a major failure.

Large-diameter steel pipe, coated and lined with coal-tar enamel, is unexcelled for water transmission and distribution mains. No other material can equal its resistance to damage due to external loadings. It withstands impact and vibration; it has the beam strength to span washouts. And modern, protective materials maintain its continued high flow capacity indefinitely.

Most of the nation's major cities regularly specify tar-enameled steel pipe. It's pipe you can rely on. We'd be glad to tell you more about it. Please contact the Bethlehem sales office nearest you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Contracts Set a May Record

Last month's heavy construction awards add up to the fourth highest monthly total ever recorded and set a new record for the month of May. The total of $1.97 billion is 29% above April on a weekly average basis and 6% above one year ago.

It brings volume for the first five months to $8.5 billion, 10% more than the same period last year.

Private contract awards in May topped $1 billion, scoring a 50% gain over April. The private total for May is also the best since December 1956.

Behind this strength are substantial gains in industrial building and mass housing contract awards. Industrial building contracts of $281 million soared 177% above April. Mass housing awards of $518 million went 56% ahead of April.

For the first five months, private contracts of $4.1 billion are gaining on public works awards, which tally $4.3 billion. Private awards are actually showing greater vitality than public works awards. Private contracts registered a 17% gain during the first five months, but public works have gained only 4% over last year.

Public works, however, are gaining some momentum. Each month since February, public contracts have inched higher. May's $959 million is 15% above the April rate, but 11% short of one year ago.

A big reactor contract bolstered the federal contracts sector in May, but not enough to lift the month above the May 1958 rate. In fact, the margin above last year for federal projects is narrowing, even though the total of $1.3 billion remains 28% above the first five months of 1958. However, it will take a big lift over the next two months to maintain this spread, because volume in June and July of last year was exceptionally heavy.

Mass housing continues to maintain its first place position in the volume of contracts. The $518 million in new contracts in May was helped generously by a single $150 million project at Lake Tahoe, Calif. (ENR May 21, p. 28).

Private mass housing contracts for the five months now stand at close to $1.9 billion. This is 16% greater than the same period last year. The total is also 45% ahead of the same months of 1957.

But the outstanding performer this year is industrial building. It more than doubled the April rate and for the first five months shows a 39% gain over 1958 with volume of more than $1.1 billion. The upturn in general business volume is forcing industry to take a second look at its capital expansion plans with an eye toward boosting them a notch or two.

Commercial building contracts during May tallied $192 million. That's 5% above April, but 18% below May of last year. For the first five months of this year, commercial building awards total $948 million, 6% ahead of the same period in 1958.

Highway contract awards in May scored a 23% gain over April, with awards of $513 million. The $1.3 billion in awards registered in the first five months is now 2% above 1958.

Public buildings awards other than housing spurted 30% ahead of the April rate under the impact of the $100 million atomic reactor award. May's total brings the category to $1.1 billion for the five-month period, 6% ahead of 1958.

Waterworks are also showing some sharp gains this year. In May, contract awards of $45 million topped April by 58%. In the first five months, contracts amounted to $189 million, a 46% gain over last year.

By regions, the Far West took the dollar-volume lead in May with awards of $496 million.

(B&I continued p. 88)

Engineering Construction Contracts for May

Four Weeks—Thousands of Dollars (000 Omitted)

	May, 1959							% Change May (av. wk.)	Five Months— Continental U. S. Cumulative 1959	1958	% Change '58 to '59	Canada May 1959
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total Continental U. S.					
Public Works, Total	**36,753**	**152,819**	**180,282**	**131,260**	**190,250**	**267,435**	**958,799**	**−11**	**4,348,804**	**4,189,724**	**+ 4**	**41,446**
Waterworks	280	9,196	21,681	959	6,839	3,815	42,770	+24	189,213	129,236	+46	1,566
Sewerage	2,033	13,211	16,265	10,030	4,204	9,354	55,097	+12	260,815	241,102	+ 8	1,320
Bridges		4,908	7,626	12,636	11,451	4,687	41,308	−13	242,449	208,532	+16	1,338
Earthwork, waterways	431	11,729	9,639	1,134	15,303	30,079	68,515	−51	350,115	406,429	−14	994
Streets and roads	16,486	55,605	58,158	68,079	72,556	42,103	312,987	+14	1,253,104	1,228,655	+ 2	22,530
Buildings: Residential	6,360	17,900	10,784	. .	7,915	24,108	67,067	−32	294,307	464,804	−37	1,137
Other	4,442	31,541	44,684	24,759	45,778	120,570	271,774	− 3	1,148,066	1,079,526	+ 6	9,715
Unclassified	6,721	8,729	11,445	13,663	26,004	32,719	99,281	−32	610,735	431,380	+42	2,846
State & Municipal	25,276	144,798	142,950	119,903	132,931	92,495	658,353	−12	3,047,557	3,171,101	− 4	35,698
Federal	11,477	8,021	37,332	11,357	57,319	174,940	300,446	− 8	1,301,247	1,015,623	+28	5,748
Private, Total	**44,917**	**289,880**	**100,297**	**238,145**	**105,721**	**228,981**	**1,007,941**	**+29**	**4,122,483**	**3,538,551**	**+17**	**56,672**
Bridges			100	100			200	−88	350	8,186	−96	
Buildings: Industrial	9,287	41,289	37,242	147,513	23,017	22,209	280,557	+96	1,148,794	825,000	+39	13,581
Mass housing	26,339	175,735	17,700	67,580	43,734	186,600	517,688	+46	1,865,742	1,610,767	+16	23,453
Commercial	8,829	69,318	42,660	20,979	30,892	19,621	192,299	−18	947,827	892,706	+ 6	14,467
Unclassified	462	3,538	2,595	1,973	8,078	551	17,197	−55	159,770	201,892	−21	5,171
Total May, 1959—4 weeks	**81,670**	**442,699**	**280,579**	**369,405**	**295,971**	**496,416**	**1,966,740***	**+ 6**	. . . .	. . . .	. . . .	**98,118**
April, 1959—5 weeks	162,295	374,632	380,635	366,065	367,814	253,210	1,904,651*	. . . .	. . . .	. . . .	. . . .	132,385
May, 1958—5 weeks	186,062	766,170	217,331	119,858	437,781	286,473	2,313,675	. . . .	. . . .	. . . .	. . . .	219,191
Five Months—1959	**529,961**	**1,983,514**	**1,443,968**	**1,337,996**	**1,783,086**	**1,392,762**	. . . .	. . . .	**8,471,287***	. . . .	**+10**	**537,944**
Five Months—1958	494,797	2,245,444	928,815	1,434,126	1,520,296	1,104,797	. . . .	. . . .	. . . .	7,728,275	. . . .	695,085
% Change '58 to '59	+7	−12	+55	−7	+17	+26	. . . .	. . . .	. . . .	. . . .	. . . .	−23

* Add Alaska: May '59: 13,744 Apr. '59: 19,857 5 Mos. '59: 47,250

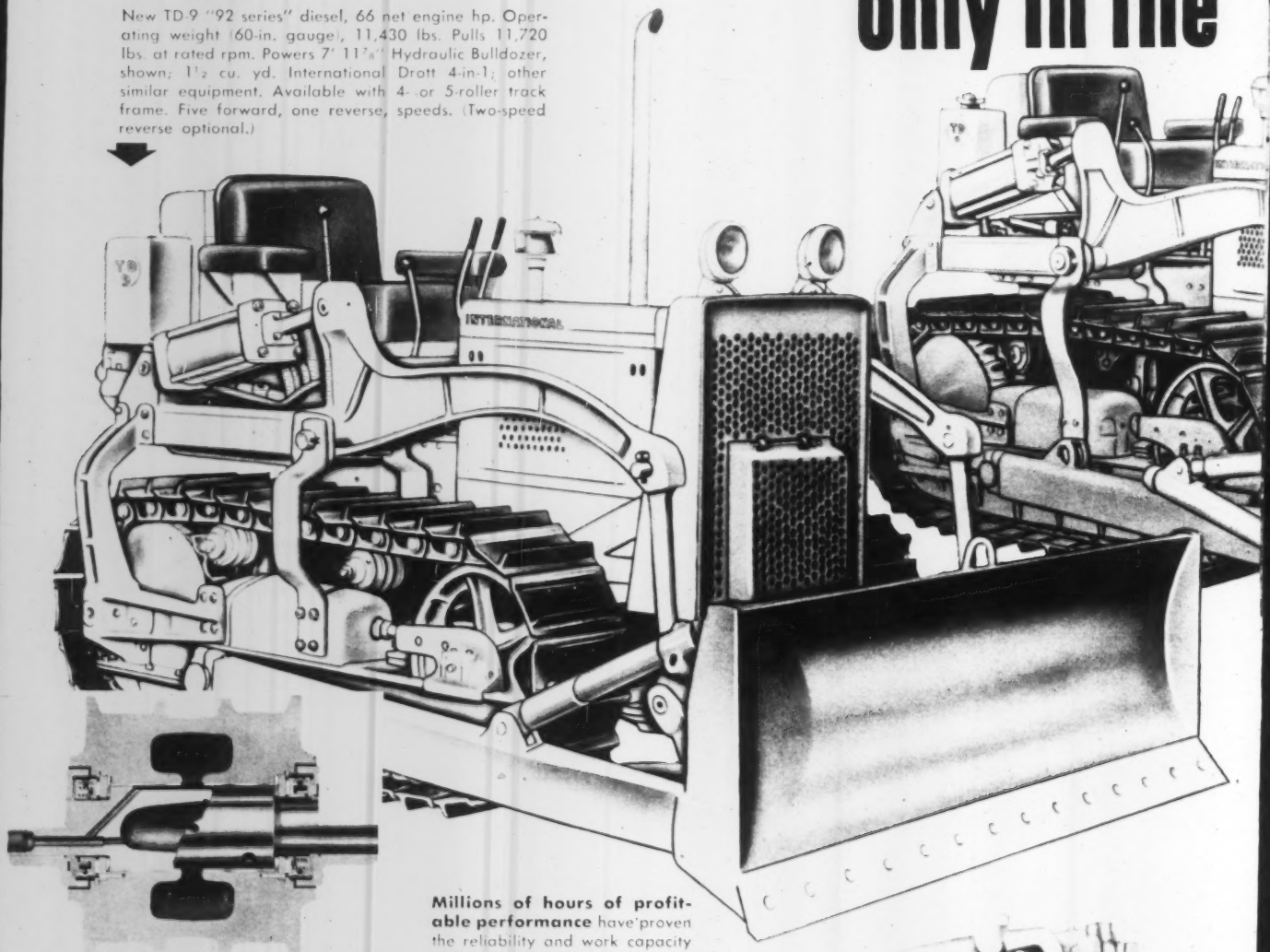
ENGINEERING NEWS-RECORD *reports continental U. S. construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $200,000.*

NOW... SIX-

only in the

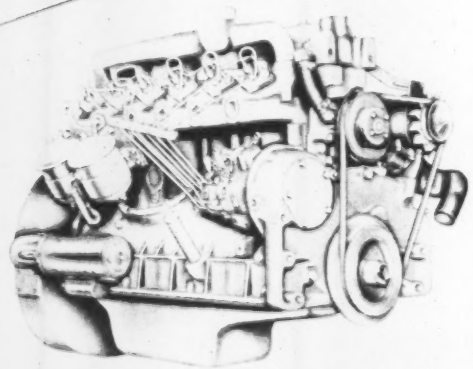
New TD-6 "62 series" diesel, 52 net engine hp. Operating weight (50-in. gauge), 8,665 lbs. Pulls 8,715 lbs. at rated rpm. Powers 8' 10½" Hydraulic Bullgrader shown; 1⅛ cu. yd. International Drott 4-in-1; other similar equipment. Available with 4- or 5-roller track frames. Five forward, one reverse, speeds. (Two-speed reverse, optional.)

New TD-9 "92 series" diesel, 66 net engine hp. Operating weight (60-in. gauge), 11,430 lbs. Pulls 11,720 lbs. at rated rpm. Powers 7' 11⅞" Hydraulic Bulldozer, shown; 1½ cu. yd. International Drott 4-in-1; other similar equipment. Available with 4- or 5-roller track frame. Five forward, one reverse, speeds. (Two-speed reverse optional.)



New 500-hr. lube interval TD-6 and TD-9 track rollers are of heavy-duty International design. Heavy-duty roller bushings are supplied from big 300% increased lube reservoirs. Exclusive vented shafts in top and front idlers, and in track rollers protect the seals from over-lubrication.

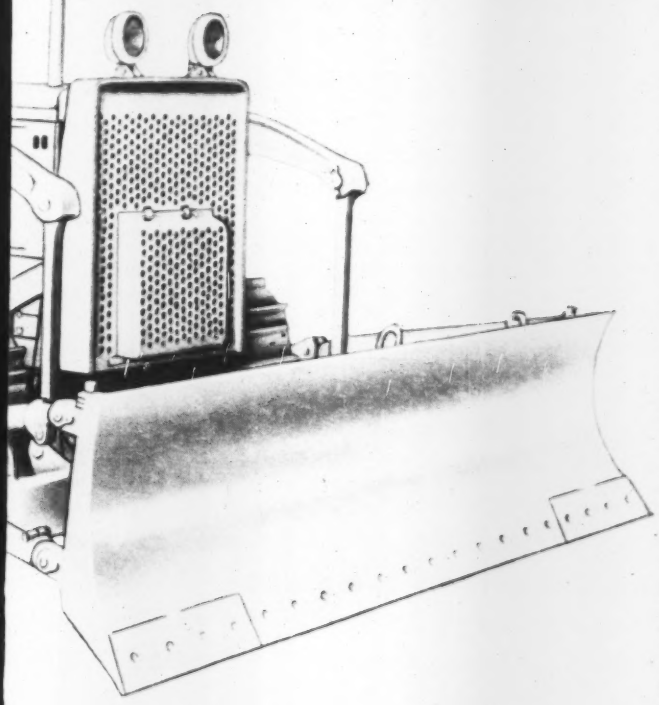
Millions of hours of profitable performance have proven the reliability and work capacity of the D-282 6-cylinder diesel engine. It's naturally-aspirated in the TD-6; turbocharged in the TD-9. Direct-electric started, this fast-governed performer features the most simple, efficient, and compact rotary-type fuel-injection pump built! Other D-282 long-life, low-upkeep features include: tri-metal main and connecting rod bearings; file-hard, replaceable cylinder sleeves; and extra power from every ounce of fuel energy put to work with a new super-swirl piston face.



CYLINDER

- smoothness
- capacity
- operating dividends

NEW TD-6 and TD-9!



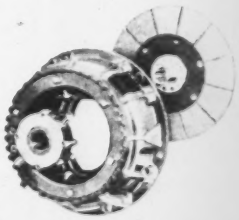
Smooth, high-torque 6-cylinder diesel power make the new TD-6 or TD-9 ideal clean-up dozer units on any sized contract; or main producing units with dozer or excavator-loader on many sizes of jobs!

Now you get the smoothness, the high-production power wallop, the dependability of a fully-proven, fuel-thrifty 6-cylinder International diesel engine—only in the new TD-6 and TD-9 crawlers. This high-torque diesel has direct-electric starting; simple, compact, rotary-type precision fuel injection!

New TD-6 and TD-9 crawlers have exclusive vented shafts in track rollers, and top and front idlers, to assure positive seal protection from over-lubrication. And newly-designed track roll'r shells have a big, 300% increased lube capacity, to make 500-hour lube intervals a practical reality!

Both of these versatile new models have the power-transfer efficiency, and all-temperature workability of new dry-type, full-face sintered metal engine clutches. Choose from a proven line of dozers, loaders, and other equipment to take full advantage of TD-6 or TD-9 six-cylinder power!

From direct-start button to heavy-duty radiator guard, new TD-6 and TD-9 crawlers practically put their new production boosting advantages under "touch control." Let a "no-holds barred" competitive demonstration prove how easily you get their big bonus margin of earning capacity. See your International Construction Equipment Distributor!



Here's the sintered metal engine clutch driven member—for TD-6 and TD-9 crawlers. New full-face design provides smooth mating of surfaces, gives the holding power and heat defiance for full-torque performance. And you get all the other advantages of dry-type clutch simplicity and low upkeep!

International Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Here's why a NEW 375-hp International®

CAN OUT-EARN ANY OTHER BIG

In the new 27 cu. yd. 495 Paywagon®, big earning advantages start with the new International DT-817 diesel engine. Forty-ton payloads highball upgrade or over rough and soft spots faster than ever behind the locomotive-like wallop of 375 turbocharged hp—more power per struck yard than any comparable wagon! Next, the "495" Paywagon's exclusive power-opened clamshell doors give positive dumping control—and retract parallel with hopper sides "clean as a whistle" from wiper plate action! Pull-away clearance, to straddle 60" high windrows, eliminates dumping delay! Too, the 495 Paywagon has new full 90° turning in either direction; new road-hugging design to gain top mph safely, out and back, at speeds up to 32.0 mph. Plus exclusive extra operator comfort and control features that reward you with extra production!

In the new 24 cu. yd. 495 Payscraper,® exclusive International DT-817 diesel power earning advantages team up with new cutting width and tapered bowl design to heap-load faster than any other 3-axle scraper of its size. And it hauls at speeds up to 32.0 mph! The scraper's big 181" cutting width promotes fast dirt break-away, permits both unit and pusher to operate within the cut for best traction. Exclusive tapered bowl design boils dirt toward center, reducing side spillage; permitting positive, forced ejection even of sticky or frozen materials. More hp per struck yard than any competitive unit—wheel and bowl leveling adjustment—custom-designed cable control unit—full 90° turns—all team up to make the 495 Payscraper the top producer of its size class!

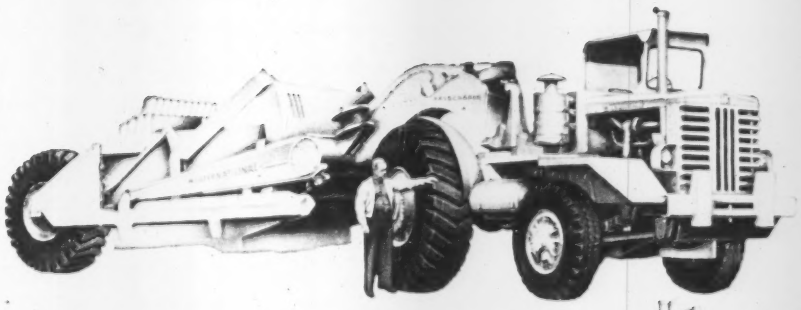
In the new 24 cu. yd. 295 Payscraper—you get the same big-capacity, high-torque engine that powers the 495's: the 375 hp DT-817! You get haul speeds up to 29.1 mph—matched with new automotive comfort and control features, that include a 16-adjustment seat. And the scraper unit of the 2-axle 295 is the same heap-loading, tapered bowl, wide-cut scraper featured in the 495 Payscraper!

Match any new International Earthmover against any similar equipment on your job or in your mind—for capacity, operating ease, low costs and net profit earning ability. See your International Construction Equipment Distributor!

Heaped, the new 375 hp International Paywagon highballs 40.5 cu. yd. (or 40.5 tons) as fast as 32.0 mph. Choose either 4-speed Power Shift or 9-speed constant mesh transmission drive.

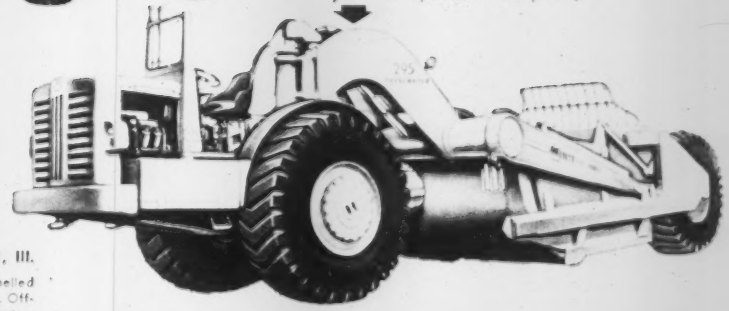
Earthmover

WHEEL RIG ON YOUR JOB!



Controlled with new custom-designed cable control unit, the 375 hp International 495 Payscraper speeds 34 cu. yd. heaped loads up to 32.0 mph. Its apron can "gape" open as high as 98"—for sure ejection of all materials!

Positive-acting air brakes—16-adjustment spring hydraulic seat—unobstructed vision—flush-deck safety—power steering—all add up to production-boosting operator comfort and ease of control of the new 375 hp 295 Payscraper. Heaped capacity: 34 cu. yd. Max. speed: 29.1 mph.



International® Construction Equipment

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A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Where's the Money Coming From?

- **States are spending more for buildings, highways and services demanded by a growing, moving population. Question is how to raise the money.**
- **The answer, generally, is higher taxes. In Michigan, tax plans are hung up and the fiscal crisis may cut back some construction.**

How to pay the bill for new buildings, highways and services remains the big headache of state legislatures.

Many states raised taxes, some trimmed proposed outlays and a few are still fighting over the problem. Biggest problems are in Michigan, which appears to be the only state in serious financial distress. It owes more than it has or expects to get. This may bring a halt in some building projects.

Greatest part of the state's public construction market will be unharmed by the fiscal crisis in Michigan. The money shortage is limited to facilities and services paid out of the general fund. One of the largest spending agencies in the state—the highway department—is not affected directly. All funds received from gas taxes go to the highway department.

But the department is hit by one unfavorable side effect of the state's financial problems. Investors apparently are becoming wary of bonds the state sells to finance highway construction. Highway Commissioner John C. Mackie says that of $25 million in highway bonds sold in March, some $10 million to $15 million remain in dealers' hands. One year ago, a $100-million offering was snapped up within a week.

Commissioner Mackie fears that unless Michigan's general financial picture is quickly improved, future bond issues will have to be sold at much higher interest rates than the state now pays. Over a long period of time, higher interest charges would cut the amount available to pay for road construction.

Ironically, the state has cash balances of close to $200 million, including highway money. However, the money is in 55 separate funds, each pledged to a particular purpose in the same manner as highway revenues.

Currently Michigan has $8 million in its general fund, but $40 million is owed. More millions of debt will fall due this month. But the politicians fiddle while creditors burn.

Gov. G. Mennen Williams, a Democrat, proposes a boost in the corporation and personal income taxes to bring in an additional $140 million yearly. The Republicans in the legislature are opposing these increases in favor of a boost in the state sales tax. The state's House of Representatives is evenly divided—55 Republicans and 55 Democrats. Neither side will budge from its position, and for 20 weeks the body has been stalemated on the issue of taxation methods.

As a result, it now looks as though some Michigan building projects will eventually come to a halt. A. N. Langius, state building director, says several building contractors have gone without progress payments from the state from one to four months. Most are continuing to operate on their own funds or short-term borrowings.

And for want of only a $15,000 supplemental appropriation, the Michigan Municipal Finance Commission is 12 weeks behind on approvals of bond issues to finance local projects. For example, a township near Detroit is awaiting processing by the commission of a $5-million bond issue proposal to pay for a sewer and water system.

Attorney General Paul L. Adams says there is a backlog of 130 proposals.

Minnesota is also having financial troubles, but not on the order of those in Michigan. Minnesota's legislature is deadlocked over tax policy in the eighth week of a special session.

Gov. Orville L. Freeman introduced a tax measure in January and it was passed by the House. But the Senate Tax Committee stripped from the bill measures providing for $85 million in new and additional tax revenue. The bill died in a conference committee when the regular session ended.

In Ohio, legislative activity is progressing in a smoother fashion. Gov. Michael V. DiSalle presented a record two-year budget of $2 billion. He also urged a pay-as-you-go policy through enactment of new and higher taxes.

The big construction item in the budget is highways. Under Governor DiSalle's proposals, highway construction outlays for the two-year period from July 1, this year, to June 30, 1962, would total $300 million, including federal-aid funds.

He asked for increases in gas and diesel fuel taxes, car registration fees, truck registration fees, and drivers' permit fees. So far, the legislature has granted the gas and diesel tax boosts.

In New England, Connecticut's legislature closed shop this week, Rhode Island and Maine are still wrestling with budgets and Vermont's legislature, now adjourned, will have to go into a special session next January.

Connecticut reversed a historic tradition in its highway financing. The state had operated on a pay-as-you-go basis. This year, the legislature backed Gov. Abraham A. Ribicoff who urged big borrowing to obtain all available federal aid over the next four years.

The legislature authorized sale of $346 million worth of bonds during the next four years. All but $38 million will go to new construction. The $38 million will be used to buy five toll bridges from the Greater Hartford Bridge Authority. Tolls on two of them had been protested by residents (ENR Oct. 9, 1958, p. 80).

The Vermont legislature approved a $2-million bond issue to assure matching funds for federal-aid highways, but it did not provide any means to pay them off. Since 1955, the state has issued $20 million in highway bonds. Another $21 million worth is authorized.

Additional revenues will be needed by Vermont, but apparently not this year. The legislature will therefore meet in special session next year to provide a new financing program for highways only. Gov. Robert T. Stafford says he does not want to raise gas taxes until neighboring states are forced into the same move. He believes this will occur in 1959. But until such boosts take effect, Governor Stafford wants Vermont to "remain competitive." The governor says that by 1960 the state will also know whether there will be

sufficient general fund money available for use by the highway fund.

Maine's lawmakers approved highway appropriations that include $20 million for new construction during the next two years. This amount will be supplemented by federal-aid funds of approximately $40 million.

Also, the legislature passed a measure, subsequently signed by Governor Clinton A. Clauson, providing for a referendum on a $13-million state highway bond issue. Another road measure signed calls for a referendum on a $3.9-million bond issue to finance construction of a bridge and by-pass on Route 1 at Belfast. Both measures will be placed on the ballot September 7.

Final action is yet to come on the proposals of Rhode Island's Gov. Christopher Del Sesto. He's asking for $85 million in new highway construction to be financed through new borrowing and federal aid. Another $10.3 million would also be borrowed to pay for other types of public improvements. Should these bond proposals be authorized by the legislature, final action will hinge on voter approval. State officials say the new highway borrowing would provide a $141.5-million highway construction program over a three-year period.

ENR Cost Indexes Push To New Record Highs

Materials prices and building trades wages continue to head up.

The ENR 20-Cities Construction and Building Cost Indexes keep climbing at a disconcerting rate. They may well exceed the 5% annual rate of increase (compounded) averaged over the past 10 years.

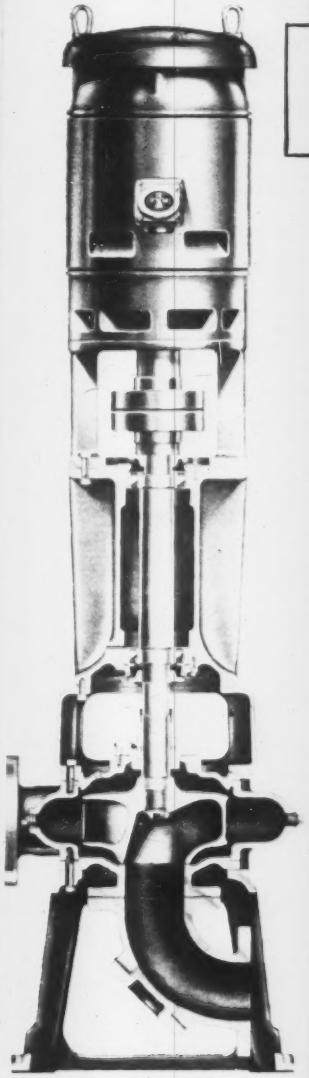
The Construction Cost Index for June is at a record 795, up five points from May. The Building Cost Index, also at a new high, reads 458.

Extremely heavy demand for lumber, complicated by a slow rising rate of mill production and pending labor negotiations, brought sharp price increases across the nation in May. Average prices for 2x4s, fir or pine, are up $8.40 per Mfbm. Increases range up to $10.75 per Mfbm in individual cities. Prices in almost all lumber categories are up $10 since last year.

Wage negotiations in May resulted in widespread wage increases, pushing up the cost indexes. The trend toward long-term contracts and deferred wage-boost provisions guarantees continued upward pressure on construction costs. Common laborers continue to gain ground on skilled workers, as the latter encounter stiffer contractor resistance to their wage demands.

For higher pumping efficiency

of solids in suspension!



NEW

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5440A Non-Clog Pumps

Ideal for pumping unscreened liquids with large solids in suspension

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Here is your answer to higher efficiencies wherever you are pumping solids in suspension!

All-new Fairbanks-Morse 5440A Non-Clog Pumps feature quick, easy convertibility between any of the many vertical and horizontal types. Power requirements of the pump are always perfectly matched to the electrical and mechanical components. Precision-machined centering fits assure accurate alignment. Exclusive F-M bladeless impeller design minimizes maintenance by preventing clogging from solids and stringy material. The 5440A is only one of many F-M solids-handling pumps designed to meet a broad range of requirements. For information, write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

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B.F.Goodrich

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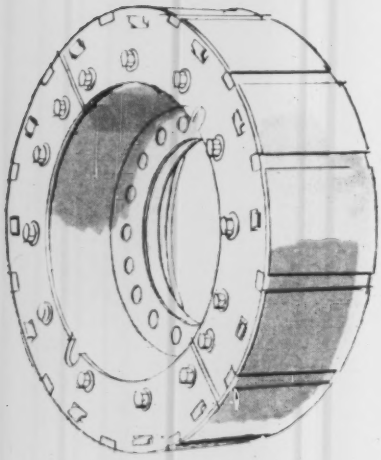

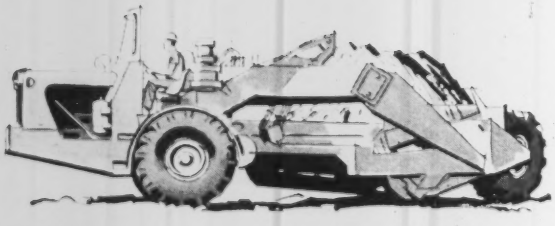

Because they are the only brakes with the reserve power to handle those giant wheeled vehicles now in production and those still on the drawing boards! Full circle stopping power provides uniform lining pressure, resists fade. In fact, B. F. Goodrich Hi-Torque Brakes stop heavy equipment up to twice as fast as conventional two-shoe brakes. Operators work faster—with greater safety—even on terrain usually considered unsafe. Join the big switch now. Specify Hi-Torque for your heavy duty off-highway equipment. B. F. Goodrich Hi-Torque Brakes are available in sizes from 17¼" x 4" to 26" x 7". They require only one hydraulic connection—need no lubrication—and adjust themselves automatically. Get the whole story. Contact: B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. EN-69, Troy, Ohio.

B.F.Goodrich *Hi-Torque brakes*

Benefits, Reform Occupy State Solons

- **Effects of recession and McClellan hearings show up in 1959 labor laws.**
- **Unemployment compensation and union regulation head the list of labor subjects that interested the state legislatures.**

The areas of labor activity that interested the 1959 state legislatures are clear-cut.

Almost all state labor legislation considered in the states this session falls into one of four groups: unemployment compensation, workmen's compensation, union regulation, and wages and hours.

Right-to-work laws and employer regulation drew only scattered attention.

Unemployment compensation—a hot subject during the 1958 recession—received the most universal attention. Twenty-six legislatures had bills on it. Many of them extended benefits to combat the lingering effects of the slump.

Sharing the spotlight with unemployment compensation bills was union regulation. The abuses of union leadership brought out by the Senate Labor Rackets Committee stimulated bills calling for stricter union regulation in at least 16 state legislatures.

Nineteen states took action on bills to raise minimum wages or require prevailing wages on public construction work. A move to liberalize workmens' compensation was evident. Of 26 states considering such bills, 18 raised and extended workmens' benefits.

• Unemployment compensation—Most of the unemployment compensation bills called for extending the duration of payments for those whose benefits had run out.

Permanent extensions of from two to 13 weeks were passed by Arkansas, Florida, Hawaii, Iowa, Kansas, Massachusetts, Ohio and Washington.

Delaware, Maryland, New Jersey, New York and Ohio extended benefits temporarily—for 12 weeks in New Jersey, 13 in the other states.

California, Illinois and Vermont also provided for a 13-week extension, and North Carolina voted eight additional weeks. But the extensions in these states take effect only when recession conditions are present, as indicated by a specified percentage of idled workers generally ranging from 4% to 7%.

Many state legislatures increased the ceiling on jobless benefits, as well as extending them. Colorado, Florida, Kansas and Vermont raised the maximum compensation to one-half the average annual wage in the state; in Massachusetts the ceiling was raised to 40% of the average annual wage.

Arkansas, Hawaii, New Hampshire, Ohio and Washington approved unemployment compensation increases ranging from $4 to $17 per week. Iowa enacted a "family plan" raising benefits to married and family workers. Gov. Edmund Brown asked the California legislature to raise benefits $15 per week.

Some of these increases came immediately out of employers' pockets. Alaska, Minnesota and Oregon raised the employers' tax paid into unemployment insurance funds.

A few states extended coverage to workers not now under unemployment insurance. Oregon extended its law to businesses employing one person, instead of the present minimum of two. Vermont dropped its minimum from four-employee businesses to three. Massachusetts passed a bill to pay benefits to strikers after six weeks of idleness, while Arkansas prohibited payments to strikers. Nebraska extended unemployment benefits to workers on no-paid vacations during a plant shutdown.

• Workmen's compensation—Ten states raised workmen's compensation benefits and three others are considering similar moves. California, Colorado, Connecticut, Iowa, Kansas, Maine, New York, Rhode Island, Vermont and West Virginia increased weekly maximum disability benefits by between $2 (in West Virginia) and $20 (in Colorado).

Iowa lifted the ceiling on maximum weekly benefits for partial injury to $44 from $32, depending on family size. Benefits for total disability were raised to $18,500 from $16,000.

Vermont extended benefit payments from 170 weeks to 215 weeks for some injuries and increased medical and hospital benefits to $5,000 from $2,500.

New York extended its coverage to businesses employing three persons instead of the previous minimum of four. Connecticut was the only state to tie disability benefits to the average weekly wage; benefits were pegged at 55% of the average.

Five states—California, Colorado, Iowa, Maine and Rhode Island—increased death benefits or burial expenses. Iowa's death benefits went up to $12,000 from $9,600; California survivors' benefits, for a widow with one child, to $20,000. Burial benefits went up an average of $150.

Three states are still considering legislation on workmens' compensation. Rhode Island would make employers pay the difference between an employee's earnings before and after partial injury, up to the allowance for total disability. Nebraska would increase maximum benefits to $57 per week from $34. Pennsylvania would increase maximum benefits for total disability to $40 a week from $37.50.

• Union regulation—Almost all state legislation on labor unions was aimed at abuses of power by union officials.

California and New York passed bills to control financial dealings of union leaders, require reporting of union affairs and regulate union elections. The California bill also provides punishment for bribes, repeals a ban on jurisdictional strikes and sets up machinery for deciding union representation and settlement of jurisdictional disputes.

Six other states are considering bills proposing greater restriction on union leaders. Delaware, Michigan and Ohio would bar felons from holding union office. The Michigan and Ohio proposals also forbid dummy locals, misuse of welfare funds, loaning money to or accepting gifts from employers, acts of violence during strikes and any interest in companies with whom bargaining is conducted. An Illinois bill proposes a commission to investigate union corruption.

Texas' legislature defeated a little

J-30 with hydraulic V conveyor boosts trench production 200%

This Cleveland J-30, digging heavily gravelled frost to 30" depth, helped Industrial Maintenance Co. of Lansing *triple* daily trench production for conduit installation at Battle Creek, Mich. The job was well pointed because of a 3½' water table.

The J-30's V conveyor—hydraulically shifted, controlled at operator's seat—discharged spoil to far side of the well point system (above) or to near side (right) without interrupting digging or crawler's forward movement. Dual independent hydraulic drives gave operator fingertip control of conveyor speeds and discharge direction.

The J-30's long-lived, 1,000-hour-lubricated track has double-flanged sprockets, rollers and wheels, drives on each end of

1½" hardened pins. Operators particularly like the trencher's balance on its long crawlers, and its easy steering and maneuverability with big 16"x3" hydraulic brakes. Digging range is 13" to 24" wide, down to 5½' deep.

Get Bulletin L-104 on Cleveland "J" trenchers from your distributor or write:

The CLEVELAND TRENCHER Co.

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Good Everywhere ®

Taft-Hartley" law and Idaho now has such a bill under consideration. The Idaho bill outlines the rights of employees, defines unfair labor practices, empowers the state labor commissioner to determine bargaining units, calls for secret ballots and specifies enforcement procedures.

Wisconsin's legislature is considering a bill that would require its Employment Relations Board to make findings now required of the courts before issuing an injunction against unfair labor practices. The bill would also eliminate the present requirement for a state referendum to establish a union shop and broaden the definition of a labor dispute to include any controversy over conditions of employment.

The Wisconsin Assembly passed a bill to repeal the state's ban on political activity by unions.

The questions of picketing and secondary boycotts, so controversial on the national scene, got little attention on the state level.

Nebraska's legislature passed an unfair labor practices law that would ban secondary boycotts or picketing of an employer where the employees rejected the union in the past year. Illinois' legislature is considering a bill to outlaw picketing by a group representing only a minority of the employees. The Arkansas Assembly defeated a proposal to outlaw union boycotts.

• **Wages and hours**—Most state legislation in this area dealt with minimum wages. Five states—Arkansas, Colorado, Maine, Maryland and West Virginia—killed proposals to require payment of prevailing union wages on public works projects. Michigan is considering a similar bill. Alaska and Oregon were the only states to pass such legislation.

Three states raised their minimum hourly wages—Alaska to $1.50, Vermont to $1 and North Carolina to 75 cents. Maine, Michigan and New Hampshire have proposals to raise minimum wage levels to $1 an hour. Connecticut and Utah bills would extend existing $1 minimums to workers not now covered. Nebraska and South Carolina have bills proposing 75 cents per hour.

Arkansas, California, Oregon, Texas and West Virginia defeated measures to set higher wage minimums.

• **Employer regulation**—Legislation in this area was scattered and patchwork. Six states have legislation that would affect contractors.

Colorado defeated a bill to require contractors to itemize deductions from the pay of migrant workers.

The Connecticut legislature defeated a bill to prohibit discrimination against

workers because of age. It is still to consider other regulatory measures.

One would allow the state labor commissioner to inspect payroll records and interview employees in regulating employer practices. Two other measures would extend regulations on hiring minors and require employers to give workers written payroll records.

The Nebraska legislature is considering an unfair labor practices law. The bill would prohibit employers from interfering with employees' right to join a union, discrimination in hiring and firing, refusing to bargain and interfering with union organization.

No Contracts

Cement industry talks drag as labor contracts expire

Cement plant workers across the country are working on a day-to-day basis, without a labor contract. Most of the industry's contracts, signed between individual plants and locals of the United Cement, Lime and Gypsum Workers, expired May 1.

No settlements are reported. Negotiations appear to be dragging, says a spokesman for one of the largest cement producers.

Negotiations with Ideal Cement Co. in Chicago, currently recessed, are scheduled to resume June 2. Ideal is regarded as one of the industry's pattern-setters.

Regardless of bargaining results, no price increases are likely because most major cement manufacturers have guaranteed their customers there would be no price hike this year.

Tony Gallo, the union's secretary, claims that about 140 locals of the United Cement Workers, representing 27,000 workers in 150 cement manufacturing plants, have voted to strike. But no strikes have been called and, as yet, the situation doesn't appear critical. A member of the Federal Mediation Commission in Chicago, the union's headquarters, doesn't regard a strike as imminent—"I think there's going to be a settlement . . .," he said.

The cement workers want increases totaling 26 cents an hour. Their original package demand added up to 44 cents an hour.

Biggest stumbling block in negotiations is union insistence on a supplementary unemployment benefits plan.

There is no uniform wage scale for cement workers, since bargaining is on a plant-by-plant basis, rather than company-wide or industry-wide. But the average wage scale is now $2.50 per hour, says the union.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record
P.O. Box 12, New York 36, N. Y.

Bids: June 16, 1959.

Contract NYA-650.078

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
ALTERATIONS TO PARKING LOT NO. 5

Sealed proposals for the performance of alterations to Parking Lot No. 5 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 16, 1959, at which time said proposals will be opened and read in Room 1105.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $20.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $20.00 per set, which payment is not refundable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents not exceeding three returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 4, 1959.

Bids: June 23, 1959.

Contract PN-140.024

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 141 AND 158
UPLAND PAVING AND UTILITIES

Sealed proposals for the construction of pavement and utilities for the upland areas at Buildings Nos. 141 and 158 on the South side of City Channel, Port Newark, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 23, 1959, at which time said proposals will be opened and read in Room 1105.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $20.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $20.00 per set, which payment is not refundable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

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THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 4, 1959.

Bids: June 18, 1959.

Contract O & M-512

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
INSTALLATION OF BY-PASSES AROUND HIGH PRESSURE WATER MAIN VALVES

Sealed proposals for furnishing all labor, material and equipment for the installation of by-passes around existing valves in the high pressure water mains at New York International Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 o'clock, Thursday, June 18, 1959, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 4, 1959.

Bids: June 18, 1959.

Contract O & M-522

THE PORT OF NEW YORK AUTHORITY
HOLLAND TUNNEL, LINCOLN TUNNEL, NEWARK AIRPORT, LA GUARDIA AIRPORT, PORT AUTHORITY BUILDING, GEORGE WASHINGTON BRIDGE, PORT AUTHORITY BUS TERMINAL, NEW YORK INTERNATIONAL AIRPORT, BROOKLYN-PORT AUTHORITY PIERS, HOBOKEN-PA PIERS
WATER TREATMENT SERVICE

Sealed proposals for furnishing all labor, material and equipment for water treatment service to boilers, evaporative condensers, cooling towers, closed hot and cold water systems and air washers at the above locations will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 o'clock Thursday, June 18, 1959, at which time and place said proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase and Administrative Service.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 4, 1959.

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

Bids: June 25, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M. advanced standard time, which is nine-thirty o'clock A. M. eastern standard time, on the 25th day of June 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Niskanen, District Engineer, 351 Broadway, Albany 1, New York.						
Albany (Rte. 9 & 155)	R.C. 59-91	London Road, S. H. 22 Shaker, Watervliet, S. H. 874	4.65	Asphalt Concrete Pavement	$8,500 Plans $5	$150,000
Greene (Rte. 9W & 23 & 23A)	R.C. 59-90	Palenville-Catskill, S. H. 5231 Saugerties-Catskill, Pt. 1, S. H. 5027 Catskill Village, S. H. 5366 Catskill, West Consaeve, Pts. 1A & 1B, S. H. 1963 and S. H. 8414 Rip Van Winkle Bridge, S. H. 8311, S. H. 8862 and Catskill Village, Main, Bridge and Spring Streets, S. H. 5685	2.53	Asphalt Concrete Pavement	$6,500 Plans $5	115,000
Schenectady (Rte. 50)	R.C. 59-84	Schenectady, Thomas Corners, S. H. 1172	1.46	Asphalt Concrete Pavement	$1,000 Plans $5	5,000
Washington (Rtes. 4, 22 & 22A & 149)	R.C. 59-76	Smiths Basin, Hartford, S. H. 802 Salem Hill, Fort Ann, S. H. 801 Comstock, Fort Ann, S. H. 1221 Smiths Basin, Baldwin Corners, S. H. 1845 Middle Granville, Hampton, Fair Haven, S. H. 1937 Middle Granville, North Granville, S. H. 5048, and Comstock, North Granville, S. H. 9016		Roadside Development	$800 Plans $5	15,000
DISTRICT No. 2, Lacy Kretsinger, District Engineer, 109 No. Genesee Street, Utica 1, New York.						
Herkimer (Rte. 28)	FASH 59-42	Herkimer Village, West Canada Boulevard Project I-551-3	0.90	Asphalt Concrete Type 1A Pavement = 0.80 Miles Misc. Work = 0.01 Miles	$15,000 Plans $5	271,000
DISTRICT No. 3, E. F. Dawson, Acting District Engineer, 333 E. Washington Street, Syracuse, New York.						
Cayuga (Rte. 90)	FABC 59-72	Mottville-Cayuga Union Springs, Pt. 2, S. H. 8516 Project I-508-5	4.18	Asphalt Concrete Type 1A Pavement	$7,000 Plans $5	130,000
Onondaga (Rte. 11)	R.C. 59-70	Syracuse-Cicero, S. H. 5470	3.30	Asphalt Concrete Type 1A Pavement	$8,500 Plans $5	153,000
Onondaga (Rte. 41A)	FABC 59-71	Skaneateles West Lake, Pts. 1, 3 and 5, S. H. 186 West Lake, Pt. 2, S. H. 242 West Lake, S. H. 48 Skaneateles Connections, S. H. 9029, Proj. S-5631-1	4.74	Asphalt Concrete Type 1A Pavement	$7,500 Plans $5	137,000
Otsego (Rte. 28)	R.C. 59-77	Fulton-Baldwinsville, Pts. 1 and 2, S. H. 872	3.58	Asphalt Concrete Type 1A Pavement	$6,000 Plans $5	110,000
Tompkins (Rte. 79)	R.C. 59-81	Enfield Center-Ithaca, S. H. 1001	6.42	Asphalt Concrete Type 1A Pavement	$10,000 Plans $5	182,000
Tompkins & Wayne (Rtes. 13B, 366, 13 & 34)	R.C. 59-76	Br. No. 1, Mecers-King Ferry, Pts. 1 and 2, S. H. 5720 Br. No. 2 and Br. No. 4, Ithaca-Freeville-Dryden, S. H. 5293 and Br. No. 1, 100 Lyons Village-Geneva Street, S. H. 9271		Clean & Paint 4 Bridges	$800 Plans $5	15,000
Wayne (Rte. 88)	FABC 59-62	Clyde-Resort, Pt. 3, S. H. 1056 Project S-284-4	1.88	Asphalt Concrete Type 1A Pavement	$11,000 Plans $5	200,000
Wayne (Rte. 14)	R.C. 59-78	Lyons-Sodus Point, Pt. 3, S. H. 1780	5.00	Asphalt Concrete Type 1A Pavement	$8,500 Plans $5	150,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York.						
Livingston (Rte. 63)	FABC 59-60	Mount Morris, Geneseo, S. H. 922 Project I-557-6	3.32	Asphalt Concrete Type 1A Pavement	$14,000 Plans $5	250,000
Monroe (Rte. 104)	FAFS-59-7	Walton Road, Sea Breeze, Pt. 1, FASH 52-1 Walton Road, Sea Breeze, Pt. 2, FASH 56-7 Project I-1092-4	2.77	Traffic Signs & Delineators	$2,000 Plans $5	37,000
Monroe (Rte. 15)	FABC 59-61	West Henrietta, Rochester, S. H. 62 Project I-F-554-4	4.77	Asphalt Concrete Type 1A Pavement	$25,000 Plans $5	433,000
Monroe (Rte. 18)	FABC 59-74	Kendall Mills, Hamlin Center, S. H. 8562 Project I-F-508-7	3.94	Asphalt Concrete Type 1A Pavt. = 3.92 Miles Misc. Work = 0.02 Miles	$9,000 Plans $5	162,000
DISTRICT No. 5, E. G. H. Vanderman, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York.						
Chautauqua & Erie (Rtes. 20 & 240)	R.C. 59-75	Br. No. 1, Orchard Park, Pt. 1, S. H. 48 Br. No. 2, Westfield Viaduct and Approaches, S. H. 5006		Clean and Paint 2 Bridges	$2,000 Plans $5	35,000
Erie (Rte. 188)	FGRD 59-52	Cardinville-Williamsville, Pt. 1, S. H. 1733 Project I-D-1080-4	0.64	36' Cem. Conc. Pavt. 2 @ 25' Wide R.R. Sep. Plate Girder 3 Sp. 209.3'	$60,000 Plans $5	1,141,000
DISTRICT No. 6, J. H. Thomas, District Engineer, State Office Bldg., 50 West Main Street, Hornell, New York.						
Chemung & Tioga & Steuben (Rtes. 14, 17 & 17)	R.C. 59-63	Painted Post Addition, Pt. 1, PSC 5331, S. H. 5349A Corning-Painted Post, PSC 5335, S. H. 5026 Elmira-North Elmira, PSC 4700, S. H. 1478 Waverly-Owego, Pt. 3, PSC 4760, S. H. 5257 and Owego-Campville, Pt. 1, PSC 5092, S. H. 1870		Clean & Paint 5 Bridges	$1,000 Plans $5	17,000
Steuben	FASS 59-16	Allen Road, Co. Rd. 22 Project S-253-1	0.32	Asph. Conc. Pavt. Comp. I-Beam Br. 1 Span 211.5'	$20,000 Plans $5	349,000
Steuben	FASS 59-15	Caton-Hornby Creek, C.R. 120 Project S-250-4	3.56	Asphalt Concrete Pavement	$6,500 Plans $5	120,000
Tioga	FASS 59-18	Tioga Center-Halsey Valley, C.R. 90 Project S-340-1	0.46	Asph. Conc. Pavt. I-Beam Bridge 1 Sp. 32' Comp. W.F. Beam Bridge 1 Span 87.5'	$10,000 Plans $5	181,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 317 Van Duzee Street, Watertown, New York.						
Saint Lawrence (Rte. 37)	FABC 59-65	Massena-Waddington, Pt. 5, S. H. 1658 Massena-Waddington, Pts. 1, 2, 3 and 4, S. H. 521 Project I-S-580-11	8.01	Asph. Conc. Pavt. = 8.02 Mi. Misc. Work = 0.02 Mi.	$12,000 Plans $5	1,082,000
DISTRICT No. 8, K. G. Rice, District Engineer, Pleasant Valley Road, Poughkeepsie, New York.						
Westchester (Int. Tour Rte. 187	FIGW1 59-1	Interstate Route Conn. 3.50 Cross Westchester Expressway, Bloomingdale Road Connection Project I-1101-8	0.66 0.97 Acc.	9" Cem. Conc. Pavt. Var. Wide = 1.06 Mi. 9" Cem. Conc. with Curb Black Var. Wide = 0.65 Mi. Asph. Conc. Pavt. = 0.42 Mi., Misc. Work = 0.10 Mi. 3 Hy. Sep. Comp. I-Beams 4 Sp. 205.4', 4 Span 2-8" and 5 Span 300.2'	$80,000 Plans $5	1,463,000
Westchester	FASS 59-17	Quaker Ridge Road, Co. Rd. 129 Project S-180-1	1.47 0.88 Acc.	9" Cem. Conc. Pavt. 48' Wide = 2.05 Mi. Asph. Conc. Type 1A Pavt. = 0.50 Mi. Hy. Sep. Rigid Conc. Rigid Frame 90.1' Span	$75,000 Plans $5	1,356,000
DISTRICT No. 9, J. C. Dykstra, District Engineer, 71 Frederick Street, Binghamton, New York.						
Broome, Delaware, Otsego, Schoharie & Sullivan	R.C. 59-67	Br. No. 1, S. H. 5112 Br. No. 1, S. H. 1486 Br. No. 1, S. H. 7008 Br. No. 1, S. H. 1241 Br. No. 1, S. H. 1110 Br. No. 6, S. H. 558 Br. No. 1, S. H. 5045 Br. No. 1, S. H. 5021 Br. No. 2, S. H. 544 Br. No. 1, S. H. 1221 Br. No. 1, S. H. 8251 Br. No. 6, S. H. 557 Br. No. 1, S. H. 1451 Br. No. 1, S. H. 1215 Br. No. 3, S. H. 5231 Br. No. 1, S. H. 106		Clean & Paint 16 Bridges	$5,500 Plans $5	99,000
DISTRICT No. 10, M. J. Gary, District Engineer, 525 W. Main Street, Babylon, L. I., New York.						
Nassau	FAUH 59-1	Long Island Expressway, Jericho Turnpike to Smith Haven Road, Oyster Bay Road Project I-110-302-18	15.46 Acc.	9" Cem. Conc. Pavt. with Curb Black 2 @ 37' Wide = 2.80 Mi. 9" Cem. Conc. Pavt. Var. Wide = 2.62 Mi. Asph. Conc. Pavt. = 3.24 Mi., Misc. Work = 0.81 Mi. 4 Sp. Ped. Overpass I-Beam 123' 1 RR Sep. Comp. I-Beam 1 Sp. 64', 3 Hy. Seps. Conc. Rig. Frame 2 Sp. 112.2', 1 Sp. 84.8', 1 Sp. 64' and 2 Sp. 112', 1 Hy. Sep. Comp. I-Beam 1 Sp. 65.8'	$140,000 Plans $10	7,803,000

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 11-2 "Prevailing Rate of Wages" Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition within 20 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding checks, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: June 19, 1959.

Advertisement for Bids

PORT READING GRADE CROSSING ELIMINATION PROJECT
WOODBRIDGE-CARTERET ROAD
TOWNSHIP OF WOODBRIDGE
COUNTY OF MIDDLESEX
STATE OF NEW JERSEY
THE CENTRAL RAILROAD COMPANY OF NEW JERSEY UNDER ORDER OF THE PUBLIC UTILITY COMMISSION
STATE OF NEW JERSEY

Sealed proposals will be received by The Central Railroad Company of New Jersey at the office of the Chief Engineer, located at Jersey City Terminal, Room 14, East of Johnston Avenue, Jersey City, New Jersey, until 1:00 P.M. D.S.T. on Friday, June 19, 1959, and publicly read at that time, for the

Construction of a bridge and approaches to carry the Woodbridge-Carteret Road over the two Main Line tracks of The Central Railroad Company of New Jersey, a bridge and approaches to carry the Woodbridge-Carteret Road over the two Main Line tracks and other Way tracks of the Port Reading Railroad, storm drainage system for roadways and grounds, and related street changes.

Principal quantities involved:

90,550 cu. yds.	Embankment fill
4,700 cu. yds.	Roadway excavation
10,000 sq. yds.	6" select sand Class "A" road gravel
30,000 sq. yds.	Top soiling
10,000 sq. yds.	6" macadam base course
2,880 tons	Bituminous concrete surface course, hot-mixed
1,500 cu. yds.	Class "A" concrete
1,080 cu. yds.	Class "B" concrete
240,500 lbs.	Reinforcement steel
952,200 lbs.	Structural steel
7,400 lin. ft.	Steel bearing piles
9 each	Manholes
22 each	Catch basins
3,200 lin. ft.	6" concrete curbs
1,250 lin. ft.	8" concrete curbs
250 lin. ft.	Concrete headers
2,800 sq. yds.	4" concrete sidewalks
1,000 lin. ft.	R.C. pipe
3,068 cu. ft.	Concrete crib walls
4,110 lin. ft.	Wire rope fence
Lump Sum	Demolition of Buildings

Proposal forms, drawings, specifications, bond and insurance requirements may be obtained upon application at the office of the Chief Engineer of the Railroad Company, at the above address, on or after May 26, 1959, by depositing $25.00 per set. A refund in full will be made to bidders upon return of each set in good condition within 30 days of award or rejection of bids.

This work will be awarded as a general contract and the successful bidder will be required to perform with his own organization not less than 80% of the total value of the contract, except for materials or items of work which require specialized knowledge, craftsmanship or equipment not ordinarily available in the contractor's organization.

All bidders must comply with Section 1.2.2 "Prequalification of Bidders" as covered in the Standard Specifications 1941 of the New Jersey State Highway Department. Prequalification forms will be furnished by the Administrative Section, State Highway Department, Trenton, N. J. All prequalification of bidders must be approved by the State Highway Department and proposals will be accepted only from prequalified bidders.

Bids must be made upon the standard proposal forms furnished for this purpose by the Railroad Company and must be enclosed in sealed addressed envelopes bearing on the outside the name and address of the bidder and the contract work bid upon, and must be accompanied by a certified check drawn to the order of the Treasurer of The Central Railroad Company of New Jersey, in the amount of $15,000. Bids and checks not enclosed in sealed addressed envelopes will be considered informal and will not be opened.

The Railroad Company and/or the Board of Public Utility Commissioners reserve the right to reject any or all proposals.

R. J. Minetti, Chief Engineer
THE CENTRAL RAILROAD COMPANY OF NEW JERSEY
JERSEY CITY TERMINAL
JERSEY CITY 2, N. J.

Bids: July 8, 1959

City of Rockville, Connecticut

Sealed proposals for construction of a Sewage Treatment Plant will be received by the City Council at the Building Inspector's office in the City Hall, Rockville, Connecticut until 4:00 P.M. Eastern Daylight Saving Time, on July 8, 1959, after which time they will be publicly opened and read aloud. No bids will be accepted after said hour.

Information for Bidders, Proposal form, Specimen Contract, Plans, Specifications and copies or specimens of all pertinent documents may be examined at the offices of Bowe, Albertson & Associates, Engineers, 75 West Street, New York City, New York and at the office of the Building Inspector, City Hall, Rockville, Connecticut, between the hours of 10 AM and 4 PM daily except Saturdays, Sundays and holidays.

Copies of the plans and specifications may be obtained from the office of the Building Inspector and from the offices of the Engineers upon making a deposit of Twenty-five ($25.00) dollars, which will be refunded to bidders only who apply for a refund within 30 days after the date proposals are opened and who return the plans in good condition.

Extra copies of plans and specifications may be obtained at a cost of Ten ($10.00) dollars each, which will not be refunded. Extra sheets of plans may be obtained at a cost of one ($1.00) dollar each which will not be refunded.

A certified check made payable to the order of the City of Rockville, Connecticut or a duly executed bid bond in the amount of 5% of the bid must be deposited by each bidder with his bid as a guarantee that, in case the contract is awarded to him, he will execute such contract and furnish a satisfactory Performance and Labor and Material Bond. Acceptance of the bid will be contingent upon fulfillment of this requirement by the bidder and on failure to do so, he shall forfeit the deposit.

The City Council of the City of Rockville, reserves the right to reject any or all bids, to waive any informalities or to accept the bid which in its judgment will be for the best interests of the City of Rockville.

CITY OF ROCKVILLE, CONNECTICUT
By: Herman G. Olson
Mayor
BOWE, ALBERTSON & ASSOCIATES
Engineers

Bids: June 30, 1959

Notice

The Iraqi Ports Administration, Basrah, invites Consulting Engineers and Shipbuilders to submit their offers for preparing either drawings, tender conditions and technical specifications or the study of tenders obtained directly by the Iraq Ports Administration and if necessary the supervision of the construction, of THREE TUG BOATS, H. P. 1500 each, THREE LAUNCHES, to carry 60 passengers each, TWO HARBOUR MASTER LAUNCHES to carry 6 persons each, and FOUR MOORING BOATS to carry 4 persons each.

Offers shall be sent in a closed envelope by registered mail marked "TENDER FOR STUDY AND SUPERVISION OF BUILDING CRAFTS" and addressed to:-

The Director-General
Iraqi Ports Administration,
Ma'qil, Basrah, Iraq.

or delivered to the Inspector-General of Ports, Ministry of Communications, Baghdad, Iraq against receipt and may also be sent to any of the Iraqi Republic Representatives abroad from whom outline specifications, conditions and other information can be obtained.

Offers will be accepted up to 30.6.1959, and will be closed at 12 noon the same day.

DIRECTOR-GENERAL
IRAQI PORTS ADMINISTRATION,
BASRAH, IRAQ.

May 5th, 1959

U. S. Government

Department of Commerce, Bureau of Public Roads, June 4, 1959. SEALED BIDS will be received at the office of the Regional Engineer, Bureau of Public Roads, 1610 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., July 16, 1959, for Contract 3B, Upper Portions of Bascule Piers, Woodrow Wilson Memorial Bridge over the Potomac River. The construction required includes the portions of bascule piers 1W and 1E in general above Elev. +42.0, an operator's cab, rooms and equipment, an elevator, a water supply line about 4200 feet long, and other work, all in the District of Columbia except for a portion of the water line in the City of Alexandria, Virginia. The approximate quantities for the more important items are 800 cu. yd. of Concrete, 168,000 lb. of Reinforcement Steel, and 2,600 cu. ft. of Stone Masonry. The Stone Masonry, the Operators Cab, Rooms and Equipment, and Elevator are to be lump sum items. Minimum wage rates have been fixed as required by law. Plans, specifications, and bid forms are available upon request at the address given above. A. F. Ghiglione, Regional Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. Dc-5292) will be received at Lewiston, California, until 2 p.m., Pacific Standard Time, June 25, 1959, for furnishing labor and materials for earthwork, structures, and surfacing relocation of Trinity County Road, Cedar Creek to Nelson Creek Gap, Central Valley Project, California. Location approximately 20 miles northwest of Redding, California. Principal items are 620,000 cu. yds. excavation, all classes; 3,670 lin. ft. tunneling and lining 18, 22, 24, 30, 36, 48, 66, 78 and 90-in. diameter corrugated metal pipe; 120,000 pounds furnishing and erecting structural steel; and other work. Completion time 200 days. For particulars address Bureau of Reclamation, P. O. Box 2511, Sacramento 11, California, P. O. Box 247, Lewiston, California, or Building 52, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

BRIDGE CONSTRUCTION, U. S. Army Engineer District, Memphis, Corps of Engineers, P.O. Box 97, Memphis 1, Tenn. Sealed bids will be received at this office until 1:30 P.M., C.S.T., 25 June 1959, and then publicly opened, for constructing two county bridges, Round Pond Interior Drainage, St. Francis River, Arkansas. $15.00 deposit required on plans. Information on request.

Sealed bids for central air conditioning, etc. at the Penn A.C. Building, 225 South 18th Street, Philadelphia, Pa., will be received until 2:00 P.M., EDST, June 17, 1959, and then publicly opened. Bidding material may be obtained after 5/22/59 from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

JUNE 18TH ISSUE CLOSES JUNE 8TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Ads, Div. of this publication. Send to office nearest you
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Assistant City Engineer — Age—Under 50—Civil Engineer College Degree—Two (2) Years Experience. Experience in administration, supervision over men, maintenance work planning, job assignment and plan and design of streets and parks desirable. Write City Clerk, City Hall, Cumberland, Maryland, before June 15, 1959.

Wanted immediately highway construction superintendent for concrete structures work. Excellent opportunity for a man to take charge of project which will last approximately eighteen months. Write giving details concerning past record, references, etc. Salary open. Project located in Kentucky. P-1736, Engineering News-Record.

Hydraulic Engineer with experience in river hydraulics, stream gaging and analysis of hydrologic data needed to fill vacancy in Hydraulic Data Section. Salary range $6600 to $7,500. Opportunity for advancement. Send resume to Chief Engineer, Indiana Flood Control and Water Resources Commission, 1330 West Michigan Street, Indianapolis 7, Indiana.

Municipal Building Inspector for administration of Building Code, Zoning and Housing Ordinances. Graduate engineer experienced in building construction and municipal ordinance enforcement preferred. Good working conditions. Salary $6,075-$7,525. Submit qualifications to Superintendent of Public Works, Municipal Building, Montclair, N. J.

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1293, Engineering News-Record.

Engineering Inspector, Party Chief and Engineering Draftsman—Salary $410-$550 per month. Could hire at $360 or $450 depending on qualifications. Degree in Civil Engineering or considerable experience in engineering work with college level courses in engineering. Apply by June 16, 1959 to Leroy J. Brenneman, Personnel Director, City Hall, Phoenix, Arizona.

Bridge designer, graduate civil engineer with minimum of five years experience in all phases of bridge design. Registered Engineer preferred. Must be capable of handling the complete design, and be able to supervise the preparation of plans for all types of bridges. Real opportunity with expanding firm. Send resume giving education, experience, references and vital statistics to P-1820, Engineering News-Record.

Resident Engineer: Graduate Engineer experienced in soil compaction, crushed stone base, and bituminous and concrete surfacing for airport runway project in southern Mid West location. Established Mid West Consulting Firm. Write, giving availability and experience. Salary commensurate with ability. P-1839, Engineering News-Record.

Wanted—Graduate Civil Engineer—3 to 5 years field experience layout roads and bridges—interested in permanent position—can progress to Asst. Supt. or Supt. of Construction—Principal working area New York and Pennsylvania. Submit full resume, experience, salary, education. P-1294, Engineering News-Record.

• POSITIONS VACANT

Supervising Architect—Capable of managing large scale Apartment Developments. Forward Complete resume. P-1761, Engineering News-Record.

Town Engineer—Southington, Conn., population 17,500, semi-rural with rapid growth and all the problems you want to tackle. Must have broad municipal experience and qualify to register in Connecticut. Recently-established position with July 1 budget for staff of three plus summer help. Up to $8,000 for best man. Resume to Director of Finance, Town Hall.

Mechanical Design Engineer: Pulp and Paper Mill machinery and equipment design. Equipment and material selection, specifications and layout. Minimum 8 years' design experience, preferably in the pulp and paper industry. Engineering degree required. Scenic Middle-Atlantic States location. Excellent opportunity. Salary commensurate with ability. P-1810, Engineering News-Record.

Experienced Architects and Architectural Draftsmen. Excellent opportunity with established consulting firm in Middle West. State education, experience and required salary. Reply to P-1545, Engineering News-Record.

Sanitary Engineer to direct Division of Sanitation with generalized program in well established County Health Department. Population: 82,000. Liberal vacation, sick leave, retirement, longevity benefits. Cattaraugus County Health Department, 302 Laurens Street, Olean, New York. Salary: $6,561-$7,650.

Superintendent wanted for sewer, water, grading and concrete jobs of small and medium size. Ability to estimate and expedite as well as civil engineer training desirable. Salary commensurate with ability to produce. Locate Illinois. Established company. Please furnish resume stating education, experience and salary requirements. P-1529, Engineering News-Record.

• POSITIONS WANTED

Construction Superintendent B.S.C.E. Hvy. Earthwork, Highways, Flood Control, 15 yrs. exp. bidding, estimating, supervising. E. Haswirth, 3119 Utah, St. Louis, Mo., Pr. 2-4510.

Const. Foreman or Asst. Supt., 37. Prefers overseas employment but will accept domestic job. 20 yrs. experience commercial industrial construction. Seeking immediate employment. Good references. PW-1760, Engineering News-Record.

Bituminous & Soils Engineer, 28, BS, 6 years experience all phases bituminous concrete and soils work pertaining to highway projects. Includes pavement mix design, quality control of hot-mix plant operations, paving supervision, soil compaction control, etc. Desires to combine bituminous and soils background into permanent position with established organization. PW-1789, Engineering News-Record.

Soils Engineer—M.S. '53—Prof. Eng. N.Y.; presently completing overseas assignment in charge soils and materials testing laboratory, local staff. Work included field investigations, testing, designs and reports. Seeking permanent position with consultant, any location. Married—available mid-June. PW-1786, Engineering News-Record.

Electrical Engineer; Age: 51. 30 years experience, Industrial Power Systems. Design thru construction. Estimating. Purchasing. Minimum Salary $9100. Geo. J. Ravaux, 515 E. Washington St., Hartford City, Ind.

• POSITIONS VACANT

Master Mechanic, age 44, 25 years experience with all types and kinds of construction equipment. Shop and field supervision. Lee Stanger, 1957 Columbia, Berkley, Michigan.

Construction Engineer — Project Manager. Civil Engineer with 16 years of proven experience in construction of industrial and metallurgical plants, both U. S. and foreign, wishes permanent position with contractor or engineering firm. Reads, writes and speaks Spanish. PW-1792, Engineering News-Record.

Field-office Engineer—layout, supervision computations and drafting. Experienced in Municipal and Heavy Construction. Desires to relocate. P. O. Box 53-296, Miami, Fla.

Engineer Estimator: Presently an official and Chief Engineer of large midwest general contractor specializing in industrial construction. Experience in all phases of engineering construction and administration. PW-1703, Engineering News-Record.

(Continued on the following page)

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS

TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.

MR. EMPLOYER, won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.

MR. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section.

We make this suggestion in a spirit of helpful cooperation between employers and employees.

This section will be the more useful to all as a result of this consideration.

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., INC.

330 West 42nd St., New York 36, N. Y.

TAKE-OFF ENGINEER

Major West Coast heavy construction contractor operating nationally is seeking an experienced take-off engineer to supervise this part of the estimating program. He would also assist in supervising the trainees in this program. This is an excellent opportunity for a qualified person to join an established expanding organization. Please send complete personal and experience record. Your reply will be kept confidential. Salary open.

P-1824, Engineering News-Record
68 Post St., San Francisco 4, Calif.

WANTED CONSTRUCTION EXECUTIVE

Nationally known construction company looking for top notch heavy construction executives—to head up divisions of construction company. Must be experienced in operations and costs in field of rock tunnel, rock and earth excavation work. Also water front development, deep bridge foundations and marine construction. Salary open. Please submit resume of experience and personal information in detail. Replies will be held confidential.

P-1825, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Asbestos cement pipe
DISTRIBUTORS WANTED
Choice territories open

RW-1642, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIVIL ENGINEERS
Highway Design Hydraulics

Qualified, experienced graduate civil engineers or others of equivalent background with minimum of 5 years experience will find wide open opportunities with growing consulting firm. Top starting salaries, liberal fringe benefits, including generous profit-sharing plan, group insurance, paid holidays and vacations.

Company's work is diversified: highway, bridge, sewer, flood control, and heavy industrial design. Advanced office and field equipment, including electronic computer and Tellurometer. Chicago loop location.

MEISSNER ENGINEERS, INC.
300 West Washington Street
Chicago 6, Illinois

CHIEF DESIGN ENGINEERS

WE ARE IN IMMEDIATE NEED OF THE FOLLOWING DESIGN SPECIALISTS FOR EMPLOYMENT IN OUR LOS ANGELES OFFICES

MECHANICAL:

Will require minimum of 10 years experience in design of plumbing, process piping, H&V, air conditioning, above and below ground utilities, industrial equipment layout and design, instrumentation and controls. Some field experience desirable.

ELECTRICAL:

Will require minimum of 10 years experience in design of power transmission and distribution, lighting, layout and design of airconditioning and controls, signal, alarm, telephone, public address and radio systems. Some field experience desirable.

HOLMES & NARVER, INC.
849 SO. BROADWAY
LOS ANGELES

WANTED
SUPERINTENDENT OF PRIMARY TREATMENT PLANT

Experienced Sewage Treatment Plant Superintendent for Digesters, Vacuum Filters and Incinerator. Population—175,000—average flow 28 MGD. State age, experience, education. Must be available by June 1, 1959. State minimum starting salary acceptable.

REPLY:
W. G. CUNNINGHAM
Director, Department of Streets and Public Improvement
Room 403 City Hall
Harrisburg, Pennsylvania

PROFESSIONAL OPPORTUNITY

The Department of Sanitary Engineering of the District of Columbia is accepting applications for the positions of Sewage Treatment Plant Shift Superintendents.

Desired qualifications include college degree in sanitary or civil engineering and previous experience in sewage treatment plant operation. The starting salaries for these positions are $6,490 to $7,510, depending on experience.

This is a Civil Service position as a Shift Superintendent in a high-rate activated sludge treatment plant of a design capacity of 290 mgd. Benefits include paid annual leave and sick leave, group insurance, retirement, and other employee benefits.

Those interested may send a complete summary of education, experience and personal data to Mr. Hugh A. Schreiber, Superintendent, D. C. Sewage Treatment Plant, 5000 Overlook Avenue, S. W., Washington 24, D. C.

BUILDING DESIGNERS

Positions available in consulting firm for Engineers, Architects and Architectural Draftsmen experienced in building design. Send personal information and experience record to:

STANLEY ENGINEERING COMPANY
Hershey Building Muscatine, Iowa

RIGHT OF WAY

Experienced in Illinois • Read and write legals, compute and prepare plats for property acquisition.

MACCABEE, CAMPBELL & ASSOCIATES
173 West Madison St., Chicago 2, Illinois

• *POSITIONS WANTED*
(Continued from preceding page)

Construction Supt. Top level only. Available immediately. Call Akron, Ohio, Walnut 3-0698.

Construction Executive. Wide experience in industrial, institutional, and commercial field as supt., general supt, construction manager. Available soon. PW-1516, Engineering News-Record.

Physician—allround experience. German na-tional; completed contract with US overseas construction Co. Age 38, available for foreign jobs. PW-1530, Engineering News-Record.

Civil Engineer, 33, seven yrs. Gen. Plant Engineering multi-plant corp'n. 2 yrs. Project Manager major industrial and building contractor. Bid to completion. Commercial, Monumental, Industrial Bldgs. Customer sales contacts. Responsible position with opportunity. PW-1702, Engineering News-Record.

Executive, Buildings and Heavy Construction, formerly Manager for New York Contractor, open for connection where scope requires top man, fully qualified by experience, all phases of General Contracting. Minimum $20,000. PW-1501, Engineering News-Record.

Accountant Heavy Const. Roads, Dams and Airfields. Expert Costs, Payroll, Insurance, P. & L. Statements, office manager. Please state your offer in first letter for resume. PW-1705, Engineering News-Record.

Draftsman, age 28, married 10 yrs. exper. all phases civil, some arch. Resume upon request. PW-1505, Engineering News-Record.

Field Supt. Heavy Excavation, 25 years ex-perience, all types of work. PW-1709, Engineering News-Record.

Piping and Instrument Superintendent, 18 years of heavy construction experience, chemical plants, pumping stations and power plants. U.S.A., Europe or South America. PW-1783, Engineering News-Record.

Controller-Office Manager. Presently em-ployed Controller/Treasurer of Mid-Western General Contractor. College and twelve years experience all construction. Complete financial statements, taxes, insurance, payrolls, cost systems and budgetary controls. Age 35, married. Will relocate. PW-1811, Engineering News-Record.

Civil Engineer—34—in process of resigning Air Force commission, 9 years civil and military construction, maintenance and design experience in structures, transportation and petroleum systems. Desire work with progressive firm in the South. W. R. DeKeyser, 2361 South Perry Street, Montgomery, Alabama.

• *SELLING OPPORTUNITY WANTED*

Manufacturers Representative available for Michigan. 20 years Sales experience with earth moving equipment and allied products. Age 39, currently in construction field. Available 30 days notice. RA-1677, Engineering News-Record.

SEARCHLIGHT SECTION

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BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

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The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

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DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

Reliable Heavy Excavation Equipment

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15 W Bucyrus Erie Elec. Drag, 215', 13 yd.
9 W Bucyrus Erie Elec. Drag, 160', 11½ yd.
9 W Bucyrus Erie Diesel Drag, 200', 9 yd.
7400 Marion Diesel Drag, 175', 13 yd.
7400 Marion Elec. Drag, 175', 12 yd.
625 Page Diesel Drag, 160', 9 yd.
360 M Marion Elec. Drag, 175', 8 yd.
621 S Page Diesel Drag, 125', 7 yd.
200 W Bucyrus Erie Diesel Drag, 125', 6 yd.
5 W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120' 5 yd.
120 B Bucyrus Erie Elec. Drag, 115', 5 yd.
3900, 3500 & 3000 Manitowoc Cranes
111 M Marion Drag, 100', 4 yd.
1601 Lima 4 yd. Shovel/Drag
1055 P&H Drag, 80', 3½ yd.
1201 Lima Dragline, 85', 3 yd.
54 B Bucyrus Erie Drag, 80', 2½ yd.
5560 Marion 26 yard Elec. Shovel
750 B Bucyrus Erie 20 yd. Elec. Shovel
1050 B Bucyrus Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H. L. Shovel
151 M Marion 7 yd. Elec. Shovel
170 B Bucyrus Erie 6½ yd. Elec. Shovel
4161 Marion 6 yd. Elec. Shovel
120 B Bucyrus Erie 4 yd. Elec. Shovel
111M Marion 4 yd. Standard Shovel
54 B Bucyrus Erie 2½ yd. Standard Shovel
Large selection of smaller Shovels and Draglines available
Model T 750 Reich Truck Mounted Rotary and Down the Hole Drill
Euclid Trucks - Rear & Bottom Dump
Truck Cranes, Dozers, Scrapers, Front End Loaders, Drills, Buckets, Attachments and other Misc. Equipment Available

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

FOR SALE

LORAIN MC 414-20 ton truck crane w/3rd drum Clam bkt. and Crackerball 3300±
80 lft 21WF69 steel beams 6 MFBM 2&3 x 14 pine and fir

OPEN TO ANY REASONABLE OFFER

AKRON 13, OHIO **RICHARD PAIGE CONTRACTORS, INC.** TE 6-5473

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Immediate Shipment

74 Pcs.	10" BP	42± x 50'/65'
55 Pcs.	12" BP	53± x 55'/65'
20 Pcs.	12" BP	74± x 30'/40'
16 Pcs.	12" BP	74± x 45'/60'
5 Pcs.	12" BP	74± x 70'0"
15 Pcs.	14" BP	73± x 25/40'
6 Pcs.	14" BP	102± x 28'/40'
6 Pcs.	14" BP	102± x 54'/5"

WF-H-Beams up to 36" 300±

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915 N. Delaware Ave. Philadelphia, 23, Pa.
WAlnut 2-7070

FOR SALE

(7000 LF) Rex three-way airport forms 19" x 21" x 24" (3" steel buildup
(1) Northwestern 95 Crane & Buckets
(2) Caterpillar D6 Loaders
(1) 34E Koehring Paver
(2) 34E Worthington Pavers
(1) Concut Concrete "Gang Saw"
(25) International (4) Batch Trucks
(1) 95 Northwest Crane
(1) Cedar Rapids Crusher (Commander)

All located Sheppard Air Force Base, Wichita Falls, Texas

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P. O. Box 218 Wichita Falls, Texas

Need A "Lift"?

CRANES, INC.

RENTALS

Manitowoc 3900's — Crawlers 3500's

Latest Models
Long Booms and Jibs

TRUCK CRANES

Link Belt and Bay City Cap. to 35 Tons. Booms to 150 ft. Hoists—Welders—Generators

Maspeth 78, N. Y. ST 4-1776

WANTED

12-Ton Standard Gauge Diesel Torque Converter Locomotive, prefer Plymouth

L. R. & J. L. BEATTY
919 E. DARBY ROAD HAVERTOWN, PA.

FOR SALE

ERIE STRAYER BATCH PLANT

meeting New York State Specifications

Purchased new in 1957, complete with the following:
1—Compt. Combination Bin
5 c.y. Aggregate Batcher.
35 c.f. Cementer—N.Y. State Specs.
600 Bbl. Ground Storage Silo
50 TPH Cement Bucket Elevator w. Truck dumping Hopper

ERIE TRUCK SITE UNLOADER

Under track screw, truck loading spout, 7½ H.P. 220 volt, 3 phase, 60 cycle elec. motor.

Located in Albany, N.Y. area—available at once

CAYUGA FOUNDATION CORPORATION
30 Vesey St., New York 7, N. Y.
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U. S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. $35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or $25.00 per mile. Write for free list on telephones. All shipments F.O.B. Simpson, Pa.

TELEPHONE ENGINEERING CO.
Dept. ENR109 Simpson, Pa.

STRUCTURAL ENGINEERING
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OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
Write today without obligation

WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

BUSINESS OPPORTUNITY

Wanted:—Semi-retired Sales Engineer for established dealership, prefabricated steel buildings, South Florida, commission basis. BO-1822, Engineering News-Record.

FOR SALE

For Sale—Two reconditioned Gurley Transits with new tripods. Very reasonably priced. Harold N. Learned, 12121 S.E. 260th St., Kent, Wash.

• WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the basic news paper they read.

Allis-Chalmers
HD21 Cable Bulldozer with DDPCU $17,500.
International
TD24 Cable Bulldozer with DDPCU $7,500.00

Federico Contracting Co., Inc. and
F. Evangelista & Son Construction Co., Inc.
139 HORTON AVENUE, LYNBROOK, N. Y.
LYnbrook 3-0826

FOR SALE

SHOVEL FRONT

Lima 3½ yd. shovel front, model 1201. Condition like new. Price—$9,000.

POIRIER & McLANE CORPORATION
1010 Nepperhan Ave., Yonkers, N. Y.
Yonkers 5-1800

Price $13,500.00

Allis-Chalmers HD-20H

Baker Hydraulic Straight Dozer w. extendable ripper teeth & Rear Cable Towing Winch. An ideal Clearing Machine. Location Ft. Lauderdale, Fla.

O'BRIEN & REDMOND
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USED WAYNE AND ELGIN
$1,000.00—$7,500.00

Most Reconditioned
NORTH JERSEY EQUIPMENT CO.
450 U. S. Highway No. 1, Newark 5, N. J.
Bigelow 2-2525

A LARGE AUCTION

CONSTRUCTION EQUIPMENT & CONCRETE BATCH PLANT

SATURDAY, JUNE 20, 9 A.M. (CDT) CHICAGO, ILLINOIS

LOCATION: The Boyle-Ryan Joint Venture equipment yard just East of the Tri-State Tollway, 20 mi. West of the Loop or 6 mi. South of O'Hare Airport. This is 2 mi. North of North Ave. (State 64), 2 mi. South of Grand Ave., and 2 mi. West of Mannheim Rd. (US 12 & 45), in Northlake, Ill.

NOTICE: The Boyle-Ryan Joint Venture, (M. J. Boyle & Co., Chicago, and Ryan Construction Co., Inc., Evansville, Ind.), is being dissolved. All Joint Venture equipment will be sold in this auction.

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER WITHOUT LIMIT, MINIMUM OR RESERVATION!!!

DRAGLINES—TRUCK CRANE

Bucyrus-Erie 54-B Crane-Drag-Clam, S/N 56676, with Buda power, good condition; Bucyrus-Erie 51-B Crane-Drag-Clam, S/N 78112, with Cat D-17000, low hours and good; Two Bucyrus-Erie 38-B (50-20) Draglines, S/Nos. 113218 & 112685, both with Cat D-326 power, both in good condition; Two Bucyrus-Erie 22-B Draglines, S/Nos. 116585 & 112596, Cat D-318, good to very good condition; Bucyrus-Erie 20-B Shovel, fair; General 5/8 Yd. Backhoe, fair; Lorain MC-504 Moto-Crane, S/N 23018, with Cat D-318, on Moto-Carrier with Waukesha gas power, good condition; Pile Hammers; Pile Extractor; Buckets.

TRACTORS

Four Cat D-8 Tractors, 15A, 14A & 2U, 2 with 'U' Dozers, good to very good condition; 12 AC HR-21 Tractors, all with cable or hydraulic dozers, one with rear ripper, most have new style heads, most are Very Good with Very Good undercarriages; 2 AC HD-20's, 1 pusher, 1 dozer, both good; IHC TD-24 with dozer & PCU; Cat D-7, 17A with dozer; 6 AC HD-16AC Tractors, all with dozers, good to very good; Cat D-6, fair; 8U; Cat D-4, good; 7U; 2 AC HD-9's with dozers.

MOTOR SCRAPERS—GRADERS—LOADERS

3 AC TS-360 Motor Scrapers, S/Nos. 1607, 1608 & 1610, all very good; LeT D motor scraper, good; 2 Cat 12 Graders, both 8T's & good; AC AD-4 & 'D' Graders, both good; AC HD-11G Loader, good with new undercarriage; AC HD-6G Loader, good; Whiting 2T-M Trackmobile; Cat 70 Scraper, good; 3W; Ferguson DD 60 x 60 Sheepfoot, excellent; Terrapac CH30 Vibratory Roller; Rome & Ferguson HD Discs; Jersey Spreader.

BLAW KNOX CONCRETE BATCH PLANT

This Very Good Batch Plant consists of the following Blaw-Knox components: Model P3150-G 3-Compartment, 150 Ton Aggregate Bin; Model G31-D-3-3 Material Automatic Aggregate Batcher & attachments; 3 Model BCPC600 Cement Bins; 75 TPH Cement Elevator & Screw Feeder; Model CGID2 Dual Automatic Cement Batchers & attachments; 3 Electric Bin Signals; Instant Moisture Control; All attendant equipment to make a complete Batch Plant except for aggregate bin charging equipment. This plant is all in very good condition.

CONVEYORS—SCREENS—TUNNELS

2 Iowa 3x8' DD Vibratory Screens, very good; 6 Triangle 20' Tunnel Sections, with 24" conveyors, gates, very good; Triangle Push-Button Control Panel, with good; Triangle 24"x196' lattice frame Conveyor, very good; 2 Triangle 24"x128' lattice frame Conveyors, both very good; 2 Triangle 24"x60' channel frame Conveyors, both very good.

CONCRETE & ASPHALT PAVING EQUIPMENT

Blaw-Knox XE Concrete Paving Finisher, S/N 5031, 10-15', good condition; Blaw-Knox SD Concrete Paving Spreader, S/N 5067, 10-15', good; Rex 34E single drum Paver, S/N GS 109, good; Rex 12-18½' Burlap & Belt Machine, good; Master-Bridge Deck Finisher, 20-25', good; Jaeger Finisher, S/N 42x086, set for 16', fair; Blaw-Knox PF-90 Asphalt Paver-Finisher, S/N PF112, good condition; Barber-Greene 899A Asphalt Paver, S/N 51-241, poor; 2 Seaman DTM Trav-L-Plants, both very good; R. B. Model FG24 Power Finegrader, S/N 25x24575, 20-25', very good condition.

AIR COMPRESSORS—MISCELLANEOUS

2 Ingersoll-Rand DR-600 Gyro-Flo Compressors, S/Nos. 359 & 205, with GMC power, both in good condition; 4 Ingersoll-Rand IK-315 Compressors, all with Diesel Engines, all are fair; 1 R-GK-105 Compressor, good; LeRoi 125 Tractair with Loader, very good condition; LeRoi 105 Tractair with Loader, good; Deming-Mueller size 5A Pump with Nordberg diesel engine, good; 2 Wynco 10 KW Light Plants with light towers, both fair; Hobart 300 amp Welder, good; National Model 1D Car Shaker with Motor, Jib Crane & Trolley, good; Band Saws; Many Other Items.

TRUCKS—TRAILERS

10 Mack Model B62SX Dump Trucks (1956 & 1955), with 185 HP Thermodyne engines, 10 yard Marion Beds, good to very good condition; 3 1957 Ford F-600 Flatbeds; 1954 Ford F-6 Tank truck; White WC20 Winch-Boom Truck; 1958 Willys Jeep; 2 1956 Ford F-100 Pickups; 4 1956 Chevrolet Pickups; Fruehauf 24 yard Dump Trailer, excellent; 3 Field Office Trailers.

WRITE—WIRE—CALL Auctioneers for complete list. **INSPECT** the equipment at any time. **TERMS:** Complete Payment Sale Day. Cashier's Checks, Certified Checks, Bank Letters.

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A JOINT VENTURE, OWNER

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2480 Elston Ave.
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15-B Bucyrus-Erie ½ Yd. Crane with 40' boom on Crawlers (11 years old) $7,500.00

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LS-85 Link Belt ¾ Yd. Combination Shovel, Backhoe and Crane with 35' boom on Crawlers (12 years old) $7,500.00

255A P&H Shovel on Crawlers (4 years old) $7,500.00

35-M Marion ¾ Yd. Backhoe on Crawlers (used 3 months)..... $25,000.00

820 K Lorain 2 Yd. Shovel on Crawlers (4 years old)..... $40,000.00

1000 Osgood 2½ Yd. Shovel on Crawlers (8 years old)..... $25,000.00

1055 P&H 3½ Yd. Dragline with 100' boom on Crawlers (12 years old) $40,000.00

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Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

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2½ YD. LINK-BELT CRANE-DRAGLINE
K-595, 140' BOOM & JIB
CAT. D17000 ENGINE

50 TON AMER. DIESEL LOCOMOTIVE CRANE 1946
30 TON BROWNING DIESEL LOCOMOTIVE CRANE
44 TON GEN. ELEC. DIESEL ELEC. LOCO
25 TON WHITCOMB DIESEL ELEC. LOCO.
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AMERICAN 7140 3D DIESEL HOIST
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Also Other Constr. & Ry. Equip.

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3—25 & 45 Ton Diesel Electric Locomotives
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Serial No. 32639 Johnson 400cy fully automatic plant with individual weigh batchers automatic recording equip., inclined conveyor, cement silos, and two 4cy Smith Mixers. Meets rigid Federal Specs. Good condition ready for immediate shipment.

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3—25-ton G.E. diesel electric locomotives, std. ga.
1—30-ton Whitcomb diesel electric locomotive, std. ga.
1—15-ton Porter locomotive, diesel engine, hydr. clutch
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1—1958 Model 25B—¾ Yd. Backhoe, Serial 7312, equipped same as above. PRICE $14,000.00

1—1957 Model 100BT—25-Ton Truck Crane, Serial 138, gasoline power, w fluid cplg., power steering, 80' steel erectors, boom w 2-speed hoist, tubular stop, load lowering and hyd. counterweight removing device. PRICE $25,-250.00

1—1958 Model 100BT—25-Ton Truck Crane, Serial 144, equipped same as above. PRICE $30,-500.00

These machines have low hours and are priced to sell quickly. F.O.B. our Yard, Bridgeville, Pa.

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Late Model Euclid End Dumps

12 Model 91FD — 15-17 Tons
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Latest Features Including Power Steering
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EUCLIDS
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SHOVELS, DRAGLINES, CRANES
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60D Northwest Shovel and Drag, $53,000.00
1½ yd. Marion Shovel, New 1956.

WILLIAM LUBRECHT, III
Construction Equipment
311 W. Diamond Ave., Hazleton, Pa.
Telephone GI 5-4041 or 5-0253

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One Model M7 Mixer-mobile

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850 Tons New, Unused, High Pressure PIPE & FITTINGS
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Price $4,700.00

Northwest Caterpillar

¾ c.y. Crane—45 ft. boom w extra boom head w sheaves and 15 ft. boom section, location Washington, D. C.

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NEW—USED

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TS-200's; S.N. 1950; 1966; 1992; 2233; 2 with 844 Buda engines, 2 with Buda 729 engines, one engine completely rebuilt and three overhauled. All hydraulic systems and transmissions thoroughly checked; 50% overall tire wear.
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SHadyside 1-5570
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Allis-Chalmers HD-15G 3-yd. diesel crawler tractor-shovel, GM 6-71 engine $14,000.00
Allis-Chalmers HD-9G, 2-yd. diesel crawler tractor-shovel, GM 4-71 engine 12,000.00
Allis-Chalmers HD-21 Crawler Tractor with A-C Hydraulic Bulldozer. Rebuilt engine 18,000.00

We sold these when new, traded them from their original owner, and they are now ready to go back to work.

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GReenwood 7-7200

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FOR SALE
9W Bucyrus-Erie Dragline, 8½ yd.
7W Bucyrus-Erie Dragline
170B Bucyrus-Erie Shovel, 6½ yd.
120B Bucyrus-Erie Shovel, 3 yd.
5W Bucyrus-Erie Dragline, 3 yd.
54B Shovel and Dragline, 2½ yd.
4500 Manitowoc Dragline, 3 yd.
1½ yd. Link Belt ... $15,000.00
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Phone GI 5-4041 or 5-0253

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CRAWLERS Capacities to 60 tons Booms to 180 ft.
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P and H. Lima and Manitowoc.
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SUCTION DREDGE MACHINERY
15 inch to 20 inch Suction Dredge Machinery including motors, pumps, generators, ladders and cutter head.
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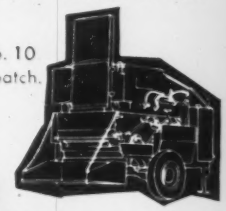

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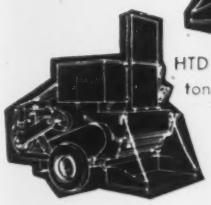

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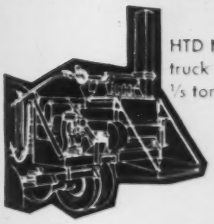

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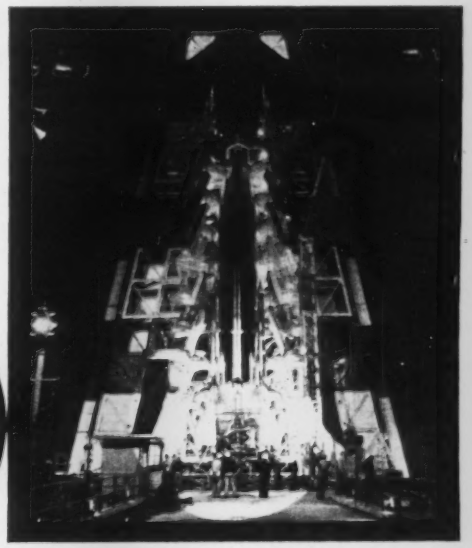

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Do Anything, Go Anywhere

THE REPUTATION OF THE CONSTRUCTION INDUSTRY as being made up of engineers and contractors who will go anywhere to build anything anytime was born sometime in the distant past. In the U.S., it certainly was extant in the days when the West was being won by pushing railroads across the prairies and through the mountains. It was enhanced by the building of the Panama Canal, and gathered luster during World War II, when construction men were called upon to build ships at home and airfields abroad.

More recently, the "anywhere" has included every continent and nearly every country of the world, while the "anything" has covered the construction of such unprecedented facilities as atomic power plants, offshore oil drilling platforms, radio telescopes and satellite launching rigs.

Now, as the problems of defense against bomb-carrying jet planes and death-dealing ballistic missiles become more complex, the unlikely facilities that construction men are being called upon to build in unlikely places have multiplied spectacularly. Construction's reputation for doing whatever is called for was never more fully under test than it is today.

One of the latest of these uncommon tasks, whose successful accomplishment depends on construction, was announced last week. It is the extension across the icy wastes of Greenland of the radar stations of the Distant Early Warning Line, which now ends on Baffin Island in Canada. Named DEW East, the extension will give increased warning of the approach of enemy planes.

That this is a formidable construction assignment is attested by the long and thorough preparations made to set the stage and by the expert and specialized engineering and construction organizations assembled to carry it out. What the preparations entailed—in learning to navigate across the ice cap, to live on and within it, to transport supplies and to operate construction equipment—was told in ENR's article, "Buildup for Better Trans-Arctic Bases" (Feb. 7, 1957, p. 30). Who will carry it out—and thus justify again construction's "do anything, go anywhere" reputation—should also be particularly noted, because it is indicative of the teamwork that many of these modern assignments require.

The overall responsibility will be in the hands of the U.S. Army Corps of Engineers acting for the Air Force. The stations will be built by Peter Kiewit Sons' Co., Omaha, and Danish Arctic Contractors, Copenhagen. Western Electric Co. is charged with the electronic and communication phases of the work, including engineering, procurement, logistical support, installation and testing. The buildings, to be mounted on adjustable supports to counter settlement and translation of the ice cap, have been designed by the engineering firm of Metcalf & Eddy of Boston and the architectural firm of La Pierre, Litchfield & Partners of New York.

Site selection—a grave responsibility, since the accuracy and coverage of the radar equipment depends on its proper location—was in the hands of an Air Force-Army Engineer survey team aided by astronomers from New York's Hayden Planetarium and scientists from the National Bureau of Standards. After sites were selected, their suitability was tested by Page Communications Engineers, Inc., of Washington, D. C. Finally, as the construction phase gets under way, big C-130 ski-mounted cargo planes of the Air Force will air lift men, material and equipment to the sites.

The setup for the DEW-East job, somewhat special though it may be, is nevertheless typical of the new demands constantly being made on the construction industry. Each involves an enlargement of the industry's environment, requires a broadening of its capabilities. That the challenge thus imposed has invariably been met is due in large measure to the willingness of engineers and construction men to tackle anything, anywhere, anytime. Construction's reputation in this regard is a legacy to be proud of and one that should be zealously guarded.

Halt Runway Lengthening

U. S. TAXPAYERS will benefit if the Federal Aviation Agency takes a firm stand against longer runways. Last week ENR reported that Gen. E. R. Quesada, FAA Administrator, has ordered extensive studies of technical developments that will permit new planes to land and take off on existing runways (May 28, p. 22). It's about time, considering how heavily airports are subsidized with public funds, to place a limit on runway length.

Airlines have been putting pressure on manufacturers to build bigger and bigger planes to get added payload. As the size of planes increases, so do their power requirements and the runway length for takeoff and landing. The FAA is considering an upper limit of 10,500 ft, about double the typical prewar runway.

With present plane design, long runways are needed because of the high velocity the newer, more powerful planes require to remain airborne. Studies, however, have shown that it is possible to lower the critical velocity by providing an uplift force. Jet planes, for example, could do this by swiveling their engines to furnish a vertical component from their jets or by employing a deflecter to divert the exhaust downward.

An investigation of uplift devices, such as FAA may now be making, is a step in the right direction. However, some means also must be found to insure that the device would be installed on the plane. Limiting runway length to present maximums could provide the needed incentive.

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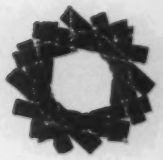

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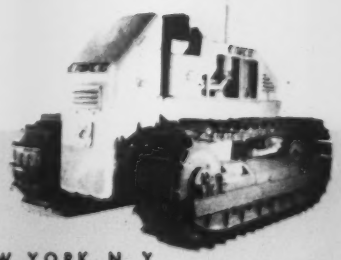

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